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EDITED BY ÅKE PETZÄLL

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Bolzano's Definition of Analytic Propositions

by

YEHOSHOUA BAR-HILLEL

(Jerusalem)

In view of recent discussions on the nature of analytic truth, it should be rather interesting to inquire into the treatment which this subject has received by the most outstanding logician of the first half of the 19th century, the Austrian philosopher, theologian, and physicist Bernard *Bolzano*. Exactly 100 years have passed since his death, and the following critical exposition of one of his most important contributions to logic will serve as a tribute to his logical genius and simultaneously try to draw more attention to his achievements from the side of workers in the field of formal logic. A similar task, with regard to *Frege*, has been successfully undertaken by Alonzo *Church*, and it is my conviction that a closer study of Bolzano's works with the help of the sharp tools of modern formal logic will bear equally important fruits.

Our discussion will center around one single section of his four-volumed masterwork, namely § 148 of his *Wissenschaftslehre* (1837). Only occasionally shall we need to refer to other parts of this work. This section, headed »Analytic or Synthetic Propositions«, comprises pages 83—89 of the second volume and is divided into three subsections of less than two pages altogether, followed by four annotations, filling the next five pages. I dwell so long upon these bibliographical particulars only to bring into

full light the wealth of systematic and historic material contained in these few pages.

1. *Pre-History*

Bolzano's aim, in § 148, was to define a concept which could serve as an adequate explication for what is commonly termed 'logical truth'. Though this aim is nowhere explicitly stated, there can be no doubt about it, just as *Kant* before him and many logicians after him doubtless aimed at the same target when they proposed their respective definitions.

Bolzano dedicates the greater part of his fourth annotation to the discussion of many such attempts made by his predecessors and contemporaries. He mentions *Aristotle*, *Locke*, *Crusius* — this German logician who lived in the first half of the 18th century was probably the first to use the terms 'analytic' and 'synthetic' in their Kantian senses —, *Kant* and many other minor philosophers. He succeeds in proving without any difficulty the inadequateness of Kant's two definitions for 'analytic', the one given in his *Logik* and equating, in effect, Analytic¹ with Identical, the other much better known in the introduction to the Critique of Pure Reason, where he proposes to call such propositions 'analytic', whose predicate-concept is contained (in a hidden manner) in the subject-notion. Bolzano points out (p. 87) the vagueness of the term 'contained' and argues that, according to a quite natural interpretation of this term, the proposition »The father of Alexander, King of Macedonia, was King of Macedonia» ought to be analytic, a consequence which Kant certainly did not intend to be drawn.

But to even more refined versions of Kant's definition, given by some of his followers, replacing the vague 'contained' by more

¹ Whenever suitable, I shall follow Carnap in using the method of *capitalizing* to avoid, as far as possible, collisions with customary English grammar without relying on the palliative of double quotation marks. Sometimes, however, the latter method will be used, especially after 'proposition' — in this case the quotes will not quote at all. In our case, I write 'Analytic' instead of 'the property of being analytic'. Compare R. Carnap, *Meaning and Necessity*, 1947, p. 17 note 10 and p. 27 note 15. This book will in future be referred to as 'MN'.

concise terms, such as those making use of 'essential characteristics' is an obvious manner, Bolzano objects that only one type of propositions conforms to them, namely 'A (which is B) is B'. But should not, continues Bolzano, also propositions of the type 'Every object is either B or non-B' be counted among the analytic propositions?

Having thus convinced himself of the inadequateness of all prior approaches, he started to attack the subject along a new and highly original line.

2. *Terminological Remarks*

We must, first of all, acquaint ourselves with Bolzano's terminology to a degree sufficient for our purposes. Incidentally, these preliminary steps have a certain actual value, as we shall see immediately.

Let it therefore be noted that Bolzano uses the term 'proposition' ['Satz an sich'] as that which is expressed by a sentence, which is merely a linguistic expression [ein sprachlicher Ausdruck] of a proposition. This distinction, now familiar to everyone, was probably drawn, in such concise and explicit terms, for the first time by Bolzano himself. (For those interested in ontological aspects, let it be added that Bolzano denies often and strongly any kind of existence, being, or actuality to propositions — in contradistinction to sentences and judgments.)

Propositions are composed of *concepts* [Vorstellungen an sich] which are as objective as the propositions themselves and must be distinguished (a) from their linguistic expressions, (b) from the thoughts of them, and (c) from their objects [Gegenstand], if they have such objects at all. Every constituent of a simple proposition is a concept; in the proposition »Titus is idle«, the *singular concept* [Einzelvorstellung] — it seems to me that this term corresponds almost exactly to the 'individual concept', invented by either *Church* or *Carnap*² or both of them independ-

² W. V. Quine in »The Problem of Interpreting Modal Logic« (PIML), The Journal of Symbolic Logic, vol. 12 (1947), pp. 43—48, refers to 'individual concepts' as »Church's phrase« (p. 47). Carnap, on the other hand, in MN, p. 39

ently — Titus is the subject-concept, Idle the predicate-concept, and Is the Copula(-concept). (Incidentally, Bolzano develops at length a curious theory that not forms of 'to be' but of 'to have' are to be regarded as the copulas of the standard forms of propositions. Happily enough, this theory plays almost no part in our restricted domain of interest, so that we may disregard it, without distorting thereby Bolzano's intentions.)

Let us coin the word 'objectal' to render Bolzano's 'gegenständlich' ('objective' is obviously not suited). Some concepts are objectal, some, such as Round Square or Golden Mountain, are not.

3. *Universally Valid*

In his search for an adequate explication of 'logically true', Bolzano was led by the old idea of the formality of logic, of its independence of content. It is one of Bolzano's greatest achievements that he succeeded in giving to this vague idea an exact and testable formulation.

He started with the improved version of Kant's definition.

and p. 41, speaks of 'individual concept' as a term coined by himself for a concept of a new kind.

It is perhaps interesting, in this connection, to note that in Bolzano's theory there is indeed »corresponding to each concrete object, a multitude of distinguishable entities» (PIML, p. 47), namely, interchangeable concepts of equal extension [Wechselvorstellungen von einerlei Umfang], though Bolzano does not accept, of course, the other side of the »queer ontological consequences» to deny the existence of material objects.

But these entities are not »objects». The distinctions which made *Meinong*, the *Russell* of *The Principles of Mathematics*, and C. I. *Lewis* populate the universe with different kinds of objects, actual, possible, and impossible ones, are made by Bolzano without recourse to such dubious modes of speech which would considerably complicate ordinary language (to leave alone ontological considerations) by distinguishing between concepts which are objectal (compare the end of this section) and those which are not, a distinction drawn by Carnap for exactly the same purpose in his lengthy discussion of this subject in MN, § 16. Carnap's terms are 'not empty' for 'objectal' and 'empty' for 'not objectal'. Carnap draws furthermore the important distinction between 'F-empty' and 'L-empty', whereas Bolzano does not distinguish between the corresponding two kinds of non-objectality, exemplified by Golden Mountain and Round Square.

Sure enough, he had exhibited the inadequateness of this definition, but as far as it went, it worked. »A which is B is B« was a logical truth, though not the only form of it. But why was it a logical truth? Because, said Bolzano, the concept B ('B' is a constant of undetermined meaning — there are no variables in Bolzano's logic, probably because there are no variables in ordinary language, but with the help of his specially invented method of Variation of Concepts, Bolzano successfully overcomes this handicap) occurred in it *vacuously*. Of course, he did not use these words, but in this convenient form, due to *Quine*, we may render what Bolzano would have formulated »because the concept B may be varied at will without disturbing thereby the truth of the proposition« (p. 83). This vacuous occurrence of a concept embodies the content-independence of the proposition, ensures its formal character, so that if the proposition is true at all, it is so formally, logically.

Generalizing, Bolzano defines 'universally valid' and 'universally contravaliid' as follows (in a slightly modernized and rigorized form):

The proposition *p* is called *universally valid* (*universally contravaliid*) *with respect to the class of concepts A* if and only if the propositions which may be developed from *p* by varying at will every occurrence of the elements of *A* in *p*, provided that all the occurrence of the same concept will be replaced by occurrences of the same other concept and provided that the resulting propositions will be objectal, are all of them true (false) (§ 147, p. 82).

To reduce this rather clumsy definition to an easily graspable form, let us introduce some abbreviations. We shall use 'uval_A' instead of 'universally valid with respect to A', analogously 'uconval_A', 'Var_Ap' ('a variant of *p* with respect to A') for 'an objectal proposition resulting from *p* by replacing every occurrence of the concepts of *A* in *p* by occurrences of other concepts, provided that all occurrences of *one* concept are replaced by occurrences of *one* concept', and '=_{df}' for '... called ... if and only if ...'.

We can now reformulate the previous definition:

p is $uval_A \equiv_{\text{Df}}$ all $\text{Var}_A p$ are true.

Analogously:

p is $uconval_A \equiv_{\text{Df}}$ all $\text{Var}_A p$ are false.

If p is $uval_A$, then every element of A occurs in p vacuously, and the truth of p is therefore independent of the content of these concepts. Were it not for the fact that $uval_A$ was a relative concept, so that one and the same proposition might at the same time be $uval_A$ but non- $uval_B$, for suitable A and B , this concept would already have been Bolzano's choice for an explication of Logically True, and $uconval_A$ analogously for Logically False.

4. Bolzano's Definition of 'Analytic'

To remove the relativity of $uval_A$ and thereby reach the desired aim, two natural ways lay open to Bolzano: He could use either what we could call today general or existential quantification, that is, he could have defined a proposition as *analytic* — though rejecting Kant's definition of this term, he still stuck to it as the term which should serve as the explicator³ of 'logically true' — either as a proposition *all* of whose concepts occurred vacuously in it, or as a proposition at least one of whose concepts occurred vacuously in it. The first possibility seems to us more promising and so it must have appeared to Bolzano. But — it did not work, »because, were we allowed to vary at will all constituent concepts of a proposition, we could change it into any other proposition whatever, hence obtain from it true as well as false propositions» (p. 83). Though this argument contains a curious error, of which I know no explanation, in consideration of Bolzano's exceptional logical skill and insight, though we can *not* obtain any proposition whatever from any other proposition, even if we are allowed to vary *all* its concepts — we cannot, e. g., obtain from » $2=2$ » the proposition » $2=3$ », as the reader will easily verify —, we can still obtain from clearly logical truths equally clearly

³ coined along the line of Carnap's 'designator' and 'predicator'. See MN, p. 6 note 6.

logical falsehoods by this method — we might obtain from » $2 = 2$ « the proposition » $2 \neq 2$ « —, and Bolzano's argument remains substantially in force.

Bolzano is therefore obliged to choose the other way. His definition is, in effect:

p is *analytic* \equiv_{Df} at least one constituent concept of p occurs in p vacuously.

(*Smart*, in his otherwise well-written paper on »Bolzano's Logic«⁴ makes a mistake in translation of the relevant passage which distorts completely its meaning. He translates Bolzano's »... auch nur eine einzige ...« by »... only one ...« instead of »... at least one ...«, apparently overlooking the word »auch«.)

Before going on to discuss this definition, let us note that Bolzano uses 'analytic' as a generic term comprising both 'analytically true' and 'analytically false'. It is well known that a term corresponding to Bolzano's 'analytically false' lacked in Kant's terminology, that therefore Kant's classification of propositions into analytic and synthetic ones was by no means exhaustive. This failure was avoided by Bolzano. *Dubislav* returned, some 90 years later, to Bolzano's proposal⁵ and it has been accepted, in effect, in Carnap's recent terminology, where 'analytic' and 'contradictory' have been replaced by 'L-true' and 'L-false'.

'Synthetic' is defined then as 'not analytic', and these two terms exhaust therefore, in Bolzano's usage, the possibilities.

5. *Quasi-Analytic Sentences*

Is now everything in order? Bolzano himself is not yet satisfied. In his first annotation (p. 84), he remarks that there are sentences which express analytic propositions without looking so.

⁴ in *The Philosophical Review*, vol. 53 (1944), pp. 513—533.

⁵ In *Ueber die sogenannten analytischen und synthetischen Urteile*, 1926. This book is not at my disposal, and I am referring to it through Carnap's terminological remarks at the end of the § 14 of *The Logical Syntax of Language*, 1937. I do not know, therefore, whether *Dubislav* reached this proposal independently or under the influence of Bolzano. Since *Dubislav* knew the works of Bolzano well, I guess that the second possibility is the correct one.

»One would not recognize at once that the proposition »Every effect has its cause« is . . . analytic, which it really is». This can be readily seen as soon as we replace in its given linguistic expression the word 'effect' by the synonymous (L-equivalent)⁶ expression 'thing which has a cause', thereby transforming the sentence 'Every effect has its cause' into 'Every thing which has a cause has its cause', which exhibits the analyticity of the proposition expressed by both sentences.

With Bolzano, Analytic is a characteristic of propositions, hence a non-semiotical⁷ concept, but Bolzano is far from being fully consistent, and we were already obliged, in the preceding passage, to change somewhat his own wording so as to avoid open inconsistencies. For the same purpose, we shall now introduce a semantical predicate applying to sentences and corresponding to the »objective» predicate 'analytic' which applies to propositions. Let us therefore call a sentence *analytic* if it expresses an analytic proposition rendering several occurrences of the same concept by occurrences of the same expression, but let us call a sentence *quasi-analytic* if it expresses an analytic proposition but does not render all occurrences of the same concept by occurrences of the same expression — where two concepts are »the same concept» if their expressions are L-equivalent, though not necessarily *intensionally isomorphic*⁸, and two expressions are »the same expressions», if every occurrence of the one is an occurrence of the other, and vice versa.

We can now say that the purpose of Bolzano's remark

⁶ 'synonymous' is Quine's term and meant here in the sense used by him in the third passage of p. 44 in PIML; 'L-equivalent' is Carnap's term, extended by him in MN, p. 14 to hold for all kinds of designators.

⁷ Analytic, as a characteristic of propositions, belongs to the non-semiotical, objective part of the metalanguage in question, it is an »absolute» concept in the terminology of Carnap's *Introduction to Semantics* (IS), 1942, which has been abandoned in MN, since it was likely to arouse metaphysical associations; see MN, p. 25 note 12. Bolzano, of course, uses 'analytic' in this objective sense quite naively.

⁸ i. e., built up out of an equal number of L-equivalent smallest subdesignators, cf. MN, § 14.

mentioned at the head of this section was to draw attention to the occurrence of quasi-analytic sentences, surely an important point; as a matter of fact, in Quine's usage, the class of analytic sentences is broader than that of what he calls logical truths — the equivalent of *our* analytic sentences (the equivalence is not exact, see later, § 7) — by containing, in addition, what we termed just now quasianalytic sentences.⁹

Quine considers the possibility of assimilating the quasi-analytic sentences to properly analytic sentences — I am returning now to Bolzano's implemented terminology — by reducing all terms to primitive ones. But he rejects this possibility, and rightly so, since the assumption of the existence of a standard set of extra-logical primitives in a *real* (which I take to be synonymous with 'natural') language is wholly fictitious. Bolzano, on the other hand, makes exactly this assumption, and we might therefore ask, why he did not choose this way of taking account of the quasi-analytic sentences, instead of the more complicated one with the help of L-equivalent expressions, and this the more so as the method of elimination of defined expressions is superior to the method of replacement by synonyms in being *effective*, since the »reduced« form of every sentence can be reached in a finite and definite number of steps. The answer is probably that Bolzano was well aware of the theoretical character of his assumption of the existence of primitive concepts — necessitated by certain philosophical considerations — and did not wish to bind his theory of analytic propositions to this unpractical assumption.

One should, in addition, realize that the method of elimination is not only inferior to that of replacement with respect to real languages, but that it is so for most kinds of artificial language systems, a fact overlooked, or at least not sufficiently stressed, by Quine. Let us suppose, following an example given by Carnap¹⁰, that the rules of designation of a certain semantical system state that both the primitive symbols 'a' and 'b' designate Chicago. Then the sentence ' $a = b$ ' is quasi-analytic, but the

⁹ See PIML, pp. 43—44.

¹⁰ IS, p. 87.

method of elimination is not forceful enough to show this. More generally, whenever logical relations hold between the designata of the descriptive signs of a semantical system, the method of elimination is not sufficient to reveal the quasi-analyticity of many sentences. With respect to such a system, quasi-analyticity has to be defined with the help of replacement by synonyms, in spite of the non-effective character of this method.

This non-effectiveness is strikingly illustrated by Bolzano himself. Though he stresses that »the recognition whether a proposition given in its linguistic expression is analytic or synthetic, often requires somewhat more [sic!] than a superficial look on its words», he falls himself prey to the indefiniteness of the method involved. The proposition »The angle sum of a triangle is equal to two right angles» is considered by him as synthetic, though it is really quasi-analytic, since it can be transformed, putting synonyms for synonyms, into »The angle sum of a polygon with 3 sides is equal to $(3-2)$ times two right angles», in which »3» occurs vacuously, according to a well known theorem of elementary geometry.

6. *Logically Analytic*

I am afraid that the last passage of the preceding section must have brought the reader's patience to an end. He must by long have given himself account of the almost ridiculous inadequacy of Bolzano's definition of 'analytic'. If it follows from this definition that the proposition expressed by 'The angle sum of a polygon with 3 sides is equal to $(3-2)$ times two right angles' is analytic, well, then that settles it. And it *does* follow. Bolzano himself gives immediately after his definition as an example of an analytic proposition »A morally bad man deserves no respect», the concept Man occurring vacuously in it!

A short passage in his fourth remark shows that Bolzano was aware of the deviation from current philosophical usage involved in his definition. He says: ». . . I allowed myself the previous definition, though I know that it makes the concept of analytic propositions somewhat broader [sic!] than it is usually thought

of; one does not normally count propositions like those cited in subsection 1 [the above-mentioned »moral» proposition and another similar one] among the analytic ones» (p. 88). We can only wonder about the lack of perspective which caused him to believe that his definition is only »somewhat broader», but even in this case, we must ask, what on earth prevented him from looking for a more adequate definition?

Well, the answer to this question has already been given. Bolzano simply saw no other way. He strongly — and rightly — felt that analyticity has something to do with vacuous occurrence, but in view of the fact that the demand for vacuous occurrence of *all* constituent concepts of a propositions for its being analytic would defy itself, he just had no other choice.

It is hard to believe that Bolzano could acquiesce about this state of affairs. He must have thought over and over again about this subject and tried many ways to narrow down his definition to make it a reasonable explication of 'logically true'. But then it came over him, and in the short subsection 3, he embodied what is surely one of the most important and ingenious single logical achievements of all times. Let me add immediately, that, for reasons which I shall explain in detail later on, I simply cannot believe that this subsection was composed at the same time as subsection 1 and the mentioned annotations. Let us therefore taken for granted, for the time being, that this subsection was introduced by Bolzano at the very last moment, perhaps during the printing, so that he was no longer able to rewrite this section or perhaps the whole book.

Before reproducing this subsection in full, it has to be said that subsection 2 contains four examples of analytically true propositions, namely: A is A; A, which is B, is A; A, which is B, is B; Every object is either B or non-B.

Now we are ready:

The examples of analytic propositions, given just now in subsection 2, differ from those of subsection 1 in that for the recognition of the analytic nature of the former no other that

logical knowledge is necessary, since the concepts, which form the invariable part of these propositions, belong all of them to logic; whereas for the recognition of the truth or falsity of the propositions of the kind of subsection 1 wholly different knowledge is required, since, in this case, extra-logical [der Logik fremde] concepts intrude. This distinction is rather unstable, as the domain of concepts which belong to logic is not determined so sharply that no controversies should ever arise about it. Nevertheless, it should sometimes prove to be profitable to take account of this distinction; and one might, therefore, call propositions of the kind mentioned in subsection 2 *logically* analytic or analytic in the *narrower* sense, those of subsection 1, on the other hand, analytic in the *broad*er sense.

Bolzano has found the way out of his dilemma. Neither all concepts must occur vacuously — this is too much —, nor at least one of them — this is far too little —, but *all extra-logical* concepts, for a proposition to be »logically analytic» — what an expression! —. Bolzano must have hesitated very much on the subject of delimitation between logical and extra-logical concepts (by the way, *Popper's* proposal to use 'formative'¹¹ instead of 'logical' has much for it) — and which good logician in our times has not felt the same?¹² —, but though he was not very happy about it, he finally saw that this was the only means to come to an adequate explication of 'logically true', and so he made, reluctantly and carefully, this last step.

Whether he was not so sure about the soundness of this distinction or whether, according to the hypothesis which we shall envisage immediately, he had not the time or opportunity, anyhow, he did not change his terminology in accord with his

¹¹ this proposal which coincides, incidentally, with that made by *Morris* in *Signs, Language and Behavior*, 1946 — *Morris'* term is 'formator' for 'formative sign' — appears in »New Foundations for Logic», *Mind*, vol. 56 (1947), pp. 193—235, especially p. 209 note 1.

¹² *Popper*, *ibid.*, p. 203 note 1, declares that he has removed the difficulties of distinguishing between these two kinds of signs, but refers for particulars to a paper which I have not yet seen.

new insight and preferred to coin the pleonastic term 'logically analytic' instead of renaming his old 'analytic' by, say, 'universally valid' (absolutely, not in respect to some class of concepts) and using 'analytic' in place of his unfortunate innovation.

Disregarding these terminological issues, important as they may be for the history of logic and the psychology of Bolzano, I think that we are fully entitled — and, I should say, morally obliged — to call the following definition of 'analytic' *Bolzano's definition of 'analytic proposition'*:

A proposition p is *analytic* \equiv_{Df} all the descriptive constituent concepts of p occur in p vacuously.¹³

Let us add the corresponding definition of 'analytic sentence' which I personally would not hesitate to call once again *Bolzano's definition of 'analytic sentence'*:

A sentence s_1 is analytic \equiv_{Df} there is a sentence s_2 which results from s_1 by replacing some (or all) descriptive expressions which form part of s_1 by L-equivalent expressions, such that all descriptive expressions which form part of s_2 occur in s_2 vacuously.

(This definition is, of course, relative to some language-system.¹⁴)

7. *A Conjecture on the Composition of the Wissenschaftslehre*

Even a superficial study of Bolzano's *Wissenschaftslehre* reveals that this book is full of misprints, mistakes, inconsistencies, etc., all obvious signs of insufficient revision. I did not have the means to inform myself on the history of its composition and print and shall be grateful to anybody who will point out to me

¹³ Quine, *Mathematical Logic* (ML), 1940, p. 2, writes: »The logical truths, then, are describable as those truths in which only the basic particles alluded to earlier [the logical particles] occur essentially».

¹⁴ Quine's definition, PIML, p. 44, is: »... a statement is *analytic* if by putting synonyms for synonyms it can be turned into a logical truth», where 'logical truth' is defined on the preceding page in a different way from that in ML (cf. the preceding note) — but the formulations may be easily shown to be L-equivalent, under certain suitable and obvious assumptions.

facts which will either confirm or disconfirm the conjecture I am going to make.

My hypothesis is that the *Wissenschaftslehre* has not received a final touch, for reasons unknown to me, so that several parts, written at different times, probably years apart, have been embodied side by side, without making the necessary adjustment. I conjecture, in particular, that subsection 3 of § 148 has been composed much later than the other parts of this section, so late indeed, that its far-reaching consequences for the whole section, even for the whole Bolzanian logic, have not been worked out.

My reasons for this hypothesis are:

(1) It seems incredible to me that Bolzano could have written the annotation with »somewhat broader«, mentioned above, *at the same time* at which he envisaged so clearly the difference between 'analytic in the wider sense' and 'analytic in the narrower sense'.

(2) It seems hardly believable that Bolzano should make use of such an inadequate terminology if the relevant concepts stood, *at the same time*, at his disposal. (The only other reasonable explanation, in the case of simultaneity, would be — as already mentioned — an extremely strong feeling of hesitation and uncertainty with regard to the distinctions drawn in subsection 3.)

(3) Nowhere in the long annotations to § 148 are the concepts defined in subsection 3 mentioned any more, nor — so far as I could find out — at some other place.

Add to all this the general remarks made above on the bad revision of the whole book, the fact that the book has been edited by »some of his friends«¹⁵, according to the title-page, and my conjecture gains some plausibility. It is quite possible that the existing literature on Bolzano's biography — which does not stand at my disposal — settles this question, but in case that not, I should think it a worthy task, that somebody, who has the necessary equipment, should inquire into the composition of one

¹⁵ It is known that Bolzano was the victim of persecutions by the Austrian government. It is quite possible that this fact had a certain influence on our issue

of the most outstanding books in the history of logic, Bolzano's *Wissenschaftslehre*.

8. Frege's and Husserl's Definition of 'Analytic'

Bolzano's definition made apparently no impression on his contemporaries and shared, thus, the fate of his other achievements in logic and mathematics. Even Frege, born in the very same year in which Bolzano died, who continued and brought to new life the Leibnizian attitude to logic, of which Bolzano was the only major exponent in the two centuries between *Leibniz* and Frege, did not rely on Bolzano when he framed his own definition of 'analytic' as 'what can be proved with the help of the universal laws of logic and definitions', a definition which is both vaguer and less general than that of Bolzano, since making essential use of the method of elimination, the shortcomings of which have already (§ 5) been discussed.

The definition given by *Husserl* is much more congenial to Bolzano. It is well known that the interest in Bolzano was revived primarily by Husserl who estimated him highly and claimed him as a companion in his anti-psychologistic fight. Husserl used to quote Bolzano very often, and it is therefore the more astonishing that he does not mention Bolzano explicitly when he exposes his own definition of 'analytic'.

I shall quote the relevant passage¹⁶ rather freely and discontinuously, since I am utterly unable to understand certain parts of it or to translate others which I believe to have understood:

Analytically necessary propositions, so we may define, are propositions the truth of which is completely independent of the specific descriptive nature of their *Gegenständlichkeiten* [!]; . . . ; hence propositions which may be *completely* »*formalized*» and described as special instances or empirical applications of the . . . formal or analytic laws obtained by such a formalization. In an analytic proposition, it must be possible to replace every descriptive [sachhaltig] matter by the empty form *something*, keeping fully intact the logical form of the proposition . . .

¹⁶ *Logische Untersuchungen*, II, 2nd ed., 1913, p. 255.

If we take the last quoted sentence as a definition, instead of having it as a consequence from the much obscurer original definition, we have an almost complete counterpart of what we called Bolzano's definition and an almost explicit mentioning of the »vacuous occurrence» playing the central role in it — the double 'almost' refers to the following shortcomings of Husserl's formulation: There is, normally, not *one* empty form *something* but several, one for each logical type, so that the replacement of descriptive terms by variables — this is most probably the meaning of Husserl's words — must keep the type and indicate, in addition, the connections existing between the replaced terms. It would evidently not do to replace 'Every white horse is a horse' by 'Every something something is a something' but only by something like 'Every something₂ something₁ is a something₁'. The second failure of Husserl is his disregard of what we called quasi-analytic sentences and the necessity of transforming a given sentence, prior to its »formalization», by the method of replacement by synonyms, at least in certain cases.

9. *Pseudo-Analytic Sentences*

We shall now deal with some points which, though not lying on the line of development of Bolzano's main idea, are still of sufficient interest for themselves.

As a kind of counterpart to what we called quasi-analytic sentences, Bolzano mentions the fact that there are sentences which look externally as if they expressed analytic propositions but, in fact, do not so. As an example of such »*pseudo-analytic*» sentences, as we might call them, Bolzano quotes a sentence which was already characterized by Leibniz as »an identical sentence which is not without use», namely: 'Every learned man is a man'. Bolzano remarks that in so far as this sentence is not without use, it is not identical (analytic), since its real meaning is something like »Even a learned man is fallible», which is certainly not analytic. (Indeed? The last proposition *is* analytic, according to Bolzano's original definition, since the concept Learned appears in it vacuously! This is perhaps the reason why Bolzano omitted

the word 'Mensch' in the transformed sentence and wrote the adjective 'gelehrter' with a capital 'G', thereby turning it into a substantive with no single literal equivalent in English. The German original sentence is 'Auch ein gelehrter Mensch ist ein Mensch', the transformed sentence 'Auch ein Gelehrter ist noch fehlbar'. But even if Bolzano should have used this rather unfair trick to cover an obvious failure of his original definition, it would still be extremely unsatisfactory that »Auch ein Gelehrter ist fehlbar« should be synthetic and the proposition »Auch ein gelehrter Mensch ist fehlbar« analytic. But we have dealt already enough with the involved biographical problem.)

Bolzano does not mention any method how to recognize the pseudo-character of an apparently analytic sentence. He probably believed that this question did not belong to logic proper, which was for him — to repeat once more this well known fact — a strictly non-pragmatical affair, but to the pragmatic dimension of semiotic, and if he believed so, he was certainly right. We, anyhow, shall leave this subject now for this very reason.

10. *Is Analytic an Objective Concept?*

There must have been in Bolzano's time a rather vivid discussion of the question whether the classification of propositions into analytic and synthetic ones is objective and rigid, or subjective and flexible, such that the same proposition might be analytic for some people, synthetic for others. This discussion continued for a long time afterwards and is probably not outdated even today. It should therefore be of some interest to hear Bolzano's opinion on this subject. Let it be reminded that the object-language dealt with is a natural one with no rigid semantical rules.

Bolzano cites (p. 89) a characteristic statement of a contemporary logician, *Maass*, whom he quotes often with approval and admiration. *Maass* said: »One can define a triangle as a figure, whose angle sum is two right angles; in this case, the proposition that the angle sum of a triangle is two right angles, regarded as synthetic in accordance with the normal definition, becomes

analytic». Bolzano continues: »I think otherwise. Since I do not regard a proposition as a merely connection of words which states something, but as the *sense* of this statement, I cannot admit that the proposition: The angle sum etc., remains the same whether one connects the word 'triangle' with this concept or the other». The same sentence — two occurrences of the same word-sequence-design — expresses two different propositions. The propositions are different, for »to recognize that propositions are different from one another, it is enough that they consists of different concepts, though referring to the same object» (p. 89).

Though Bolzano's reasoning strongly appeals to recent attitudes, its uncritical acceptance may lead to strange, even contradictory formulations. It is but natural to say that the two occurrences of the word 'triangle' in the mentioned two occurrences of the word-sequence-design 'The angle sum of a triangle is two right angles', though differently defined, express both the property Triangle, have the property Triangle as their intension, so that we come to the consequence that the property Triangle is different from the property Triangle. And it is indeed not difficult to see how similar formulations arise in Bolzano's writings and how he struggles to find appropriate expressions for his sound logical insights.

The source of Bolzano's difficulties is, in the main, his lack of discrimination between object-language and metalanguage — this is not an accusation, of course, but only a historically understandable statement of fact. Let us try to see what the introduction of this discrimination will lead us to.

Suppose, we have two semantical systems, S_1 and S_2 , which differ from each other only in that in S_1 'triangle' is defined as 'polygon with three sides', in S_2 as 'polygon with an angle sum of two right angles'; we need not, for our purposes, specify any further the properties of these systems, except in stating that their vocabularies are typographically identical. The metalanguage M , in which we deal about both S_1 and S_2 , contains once again a vocabulary, part of which is typographically identical with those of S_1 and S_2 , such that to each word of the two object-languages

corresponds as its translation the typographically identical word of M.

The rules of designation of S_1 and S_2 are given by the mentioned translation into M. But we cannot, of course, simply formulate the two rules with which we are concerned here as

- DR—1 'triangle' is a translation of 'triangle',
 DR—2 'triangle' is a translation of 'triangle'.

We must formulate them, so as to avoid ambiguities, somewhat like

- DR—1A 'triangle' (in S_1) is a translation of 'triangle_M',
 DR—2A 'triangle' (in S_2) is a translation of 'triangle_M'.

But from the L-equivalence (in S_1) of 'the angle sum of a triangle is two right angles' with 'the angle sum of a polygon with three sides is two right angles' follows the L-equivalence (in M) of 'the angle sum of a triangle_M . . .' with 'the angle sum of a polygon with three sides . . .' (omitting the subscripts wherever irrelevant); and from the L-equivalence (in S_2) of 'the angle sum of a triangle . . .' with 'the angle sum of a polygon with an angle sum of two right angles . . .' follows the L-equivalence (in M) of 'the angle sum of a triangle . . .' with 'the angle sum of a polygon with an angle sum of two right angles . . .'; hence the L-equivalence (in M) of 'the angle sum of a polygon with three sides is two right angles', an obviously factual sentence, with 'the angle sum of a polygon of an angle sum of two right angles is two right angles', an equally obviously L-true sentence.

The source of this contradiction lies, of course, in the rules DR—1A and DR—1B. Stipulating 'triangle_M' as a translation of both 'triangle' (in S_1) and 'triangle' (in S_2), we thereby implied the L-equivalence of 'triangle' (in S_1) with 'triangle' (in S_2), to which we were not entitled. We should have somehow indicated which term in M serves as a translation of a term of S_1 and which of a typographically identical term of S_2 , perhaps by using 'triangle_M¹' and 'triangle_M²' — we assumed that M contained translations of 'triangle' (in S_1) and 'triangle' (in S_2), but made the mistake to believe that the same term in M could serve for

both purposes. We may identify, under the conditions laid down for S_1 and S_2 , 'polygon_M¹' with 'polygon_M²', but we cannot do this for 'triangle_M¹' and 'triangle_M²'.

The correct formulation of the designation rules should therefore have been:

DR—1B 'triangle' (in S_1) is a translation of 'triangle_M¹'

DR—2B 'triangle' (in S_2) is a translation of 'triangle_M²',

from which no contradictions can be deduced.

'Triangle_M¹' and 'triangle_M²' are equivalent but not L-equivalent, and Bolzano is therefore right, when he says that the sentence 'the angle sum of a triangle . . .' (in S_2) expresses an analytic proposition, and the sentence 'the angle sum of a triangle . . .' (in S_1) expresses a synthetic proposition, in other words, that the proposition expressed by 'the angle sum of a triangle . . .' (in S_2) is analytic, but the proposition expressed by a typographically identical word-sequence (in S_1) is synthetic, these propositions therefore different, though expressed by typographically identical sentences which are moreover equivalent and even *extensionally isomorphous*¹⁷, in so far as corresponding expressions in these sentences refer to the same objects.

For a clear exhibition of the decisive improvement introduced into the discussion of such questions by the discrimination of object-language and metalanguage, let us listen to an imaginary discussion started by Bolzano's criticism of Maass' subjective conception of 'analytic'. Maass could have given to Bolzano the following reply: »My dear Bolzano, what you have so admirably explained to me is, of course, perfectly right. One must distinguish between a proposition and its various linguistic expressions. But still, tell me, the proposition that the angle sum of a triangle is two right angles, is it objectively analytic or objectively synthetic?» To which Bolzano answered: »Well, that depends upon what you understand by 'triangle'. If . . .» But here Maass interrupts impatiently: »But this very moment you have told

¹⁷ coined in analogy to Carnap's 'intensionally isomorphous' and defined in the same way, with 'L-equivalent' replaced by 'equivalent'.

that the characteristic of any proposition is objectively determined, how can it depend upon my understanding of one of the terms used to express it». Bolzano breaks into a long silence, struggling for words to explain to his partner what seems so obviously true to himself. But he does not find them; he can't find them, since a vital discrimination is lacking. And here we come to his help. With the help of some four-dimensional trick, we intrude into the discussion and say: »Excuse our interruption, but the point is simple. In which language, Prof. Maass, have you asked your question?» And after having explained him, and Bolzano, the necessary distinctions, we continue: »Now, the expression you used 'the proposition that the angle sum of a triangle is two right angles' was meant to belong to (the non-semiotical, objective part of the metalanguage) M , but — triumphantly smiling — there is no such expressions as 'triangle' in M , but only ' triangle_M^1 ' and ' triangle_M^2 '. Now either is what you asked is senseless, since in disaccordance with the grammatical rules of M , or else you meant by 'triangle' either ' triangle_M^1 ' or ' triangle_M^2 '. As soon as you will tell us which you intended to, our friend, the excellent mathematician Bolzano, will give you an immediate reply, or perhaps do you mean to renounce your question altogether?» And then we vanish again, leaving Bolzano and Maass to recover from their miraculous adventure and finish their argument by themselves.

After this journey into the past, let us return to dry logic. A proposition p expressed by a sentence s in a language-system S , properly interpreted by translation into a uniquely understood metalanguage M , is »objectively» either analytic or synthetic. Since ordinary languages are not systems, the expression '*the* proposition p expressed by the sentence s in some ordinary language' is objectionable and misleading. So long as the respective language, or a sufficient part of it, is not systemized, there is no unique proposition corresponding to the sentence s , and we may, if we like, express this state of affairs, by saying that the character of p is »subjective», i. e., depending upon the silent systematization of the different users of s .

11. *Identity of Propositions*

It is worth while, in this connection, to see how Bolzano understood 'identity of propositions'. We shall not deal here with Bolzano's theory of the material and formal equivalence of propositions, though its knowledge is necessary for a full understanding of his opinion concerning identity of propositions. Owing to lack of space, we shall content ourselves with as much as can be grasped without that.

His various remarks concerning this subject are not all of them completely consistent, which is perfectly understandable in view of the lack of an appropriate terminology. We shall therefore make use only of those passages which seem to us to express his main intentions. I would not hesitate to formulate Bolzano's criterion for the identity of two propositions expressed by two different sentences as *intensional isomorphism*, provided we could have persuaded him to overcome his reluctance to use such a phrase as '*two identical propositions*' — a reluctance which he expresses for instance when he says that »there are no two completely equal propositions» (p. 92) or »propositions of identical meaning are not many, but One propositions» (p. 140).¹⁸

In any case, less than that would certainly not have done. He explicitly denies the identity of the propositions expressed by 'Cajus is the father of Titus' and 'Titus is the son of Cajus' on the ground that, in spite of their L-equivalence, their subjects

¹⁸ and which is shared by G. E. Moore, who, more than a century later, asks »how could it be correct to say that» certain »two» propositions »are the same proposition, unless it were correct to say that» the first »is *one* proposition» and the second »is *another*?» (»Russell's 'Theory of Descriptions'», *The Philosophy of Bertrand Russell*, 1944, p. 207) Moore's struggles continue over several pages and are quite understandable, as well as those of Bolzano, from the point of view of ordinary usage, where 'two' is used, almost without exception, as synonymous with 'two different' — what would you think of a man who orders two fried eggs and having got them starts arguing that he meant *two identical* eggs? —. But since acceptance of common usage in this point would mean to introduce terrible complications in mathematics and logic alike, it is hardly conceivable that the now accepted usage of 'two' as not excluding 'two identical' will be abandoned.

and predicates are different¹⁹ (p. 140—141). On the other hand, he denies the identity, and even the (L-) equivalence of the propositions expressed by 'An equilateral triangle is equiangular' and 'An equiangular triangle is equiangular', though they are *extensionally isomorphic*, in his words, »composed in the same manner out of equivalent but not L-equivalent parts» (p. 138). This example shows, incidentally, that Bolzano envisages here a concept somewhat weaker than Extensionally Isomorphic, which might perhaps be called *Extensionally Homomorphic* (and analogously *Intensionally Homomorphic*)²⁰, which holds between sentences

¹⁹ Moore, *ibid.*, p. 210 f., deals with a completely analogously built pair of propositions, namely »the sun is larger than the moon» and »the moon is smaller than the sun». He apparently tends to look upon these propositions as two different logically equivalent propositions and not as One proposition, though the sentences expressing them do not fulfil a condition which Moore regards as sufficient for their being considered as expressions of different propositions, namely that the one sentence brings before the mind of those who understand it ideas which the other will not do. Though Moore apparently regard the mentioned sentences as not only L-equivalent but even as *pragmatically equivalent* — I believe that we may thus paraphrase his 'bringing ideas before the mind'-clause —, he still tends to look upon them as different propositions. It is almost certain that what makes him think so is the fact that his criterion of identity is »intensional isomorphism plus pragmatic equivalence». He is of course entitled to choose his criterion as he likes, and it might be that this is even the criterion which is unconsciously applied in many cases of ordinary usage, but one must bear in mind that so long as no pragmatical systems have been constructed, the pragmatical component in it will seriously hamper its workability.

I see now that my criticism of Moore in »Analysis of 'Correct' Language», *Mind*, vol. 55 (1946), pp. 338—339 was not justified. I stated there that »I can therefore by no means see what should prevent the mentioned sentences . . . from expressing the *same* proposition, in *every* »correct» usage of the word 'same', since the expressed propositions were simultaneously L-equivalent and pragmatically equivalent. There *is* one »correct» usage of 'same' in which the mentioned propositions are not the same proposition.

²⁰ This concept is probably referred to, though not specially named, by Carnap when he speaks about »at least similar intensional structures» in *MN*, p. 60.

It seems to me that Intensional Isomorphism is too strong a demand for the analysis of certain cases of belief-sentences (see *MN*, § 13) and that in these cases Intensional Homomorphism will do.

The sentences 'The diagonals of every square are congruent and perpendicular upon each other' and 'The diagonals of a rectangle with equal sides are congruent

(and between propositions, in Bolzano's usage) if they may be broken up into an equal number (at least two) of equivalent (L-equivalent) parts, which need not be the smallest sub-designators.

As already remarked at the beginning of this section, I could not possibly exhaust all that Bolzano has to say on this subject, lacking some vital terms, but I hope to have shown that everybody who is interested in the clarification of concepts such as Identity Of Propositions will draw much profit from a close study of Bolzano's relevant remarks which contain, as usual, illuminating discussions of quotations from (then) contemporary logicians.

12. 'Analytic Proposition' — *Contradictio in Adiecto*?

Bolzano quotes (p. 86) Salomon Maimon, a contemporary of Kant and one of his most acute critics, as denying the attribute Proposition from the meanings of expressions like ' $A = A$ '. Maimon's reason is that such expressions cannot serve as antecedents in inferences, an argument to which Bolzano readily

and perpendicular upon each other' are not intensionally isomorphous, since no expression in the first is L-equivalent to 'rectangle' in the second, but they are *equivalent in analytic meaning*, according to Lewis' terminology in »The Modes of Meaning», Philosophy and Philosophical Research, vol. 4 (1943), pp. 236—249, since his condition (1) is fulfilled, 'square' being elementary and equal in intension with 'rectangle with equal sides', they are also intensionally homomorphous, according to our definition. Whether they are pragmatically equivalent, depends, of course, upon the definition of this term; but it seems that for certain »natural» definitions of this term, they will not be pragmatically equivalent for everybody who understands English. And, finally, I do not know whether they bring different ideas before the minds of those who understand them. I hope that this synopsis will have aided somewhat to a future final explication of the various meanings of 'synonymous'.

One more point: Lewis states *ibid.* p. 246, that 'equilateral triangle' and 'equiangular triangle' have the same intension. This seems to me such an obvious mistake, that I am completely at a loss what to do about it. Lewis defines Intension as something »delimited by any correct definition», and accordingly 'equilateral triangle' and 'equiangular triangle' have most certainly not the same intension. I am the more embarrassed, since Carnap, who cites this passage, does not react on the involved blunder at all.

assents — in fact, he himself has a theorem which states that analytic propositions may be omitted from the premisses of a derivation —, without, however, recognizing it as sufficient to prove its point. Bolzano says no more on this subject, but it is probable that he thought Maimon's proposal as inconvenient, since it would have greatly complicated the rules of formation. »John is wise» as well as »John is not wise» would have been propositions but their disjunction »John is wise or not wise» — not, assuming that Maimon would have extended his rejection to any analytic proposition.

I mention this particular point, since its analogue with regard to contradictory propositions has been ardently discussed in recent publications.

13. *Tautological and Identical Propositions*

Propositions of the form 'A is A' form a subclass of the class of analytic propositions. Bolzano uses for them, and only for them, the terms 'tautological' and 'identical', indiscriminately (p. 84). He sharply opposes the definition of other logicians who applied the term 'identical' to propositions of the form 'A is B' where A and B were »interchangeable concepts [Wechselvorstellungen], i. e., concepts of identical extension», since in accordance with this definition the proposition »A triangle is a figure, the angle sum of which is two right angles» would be identical, »what is surely not intended to» (p. 86).

We may formulate Bolzano's terminological proposal in Carnap's terms in the following wise: Sentences of the form ' $A = B$ ' will be called 'identical' if 'A' and 'B' have equal intensions, but not if they have equal extensions only. It seems to me that this proposal stands indeed in closer connection to ordinary usage than that of his opponents.

Though Bolzano explicitly decides to call only propositions of the form 'A is A' identical, it seems that he intended to characterize, or at least hesitated whether not to characterize, by the same attribute also propositions of the form 'if p then p'. He states immediately after the passage quoted at the beginning of

§ 5: »The same [i. e., that a proposition is identical, or at least analytic, though its expression does not look so] holds of the propositions: If A is greater than B, then B' is greater than A, etc.» Now this propositions can be transformed, putting synonyms for synonyms, into »If A is greater than B, then A is greater than B», which is a clearly analytic proposition, but by no means an identical one, according to Bolzano's own definition. Since the exact meaning of the decisive phrase 'identical, or at least analytic' is not clear, we must leave it open whether Bolzano intended to characterize also compound propositions of the form 'if p then p' as identical.

14. *Terminological proposals*

I should like to end this paper with some proposals concerning the use of the main terms discussed in it. Two procedures are now common in this regard: the one works haphazardly with them, hoping for the best — the dismal fact being however that this pious hope is almost never fulfilled and misunderstandings arise without any possibility to control them; the other is to define in every paper anew the sense in which these terms are going to be used.

To escape between the horns of this inconvenient dilemma, there is, of course, only one way open: to determine, by explicit convention, the exact senses (»exact», *cum grano salis*, of course) of these terms once and for all.

The following terminology is proposed for consideration. Its leading ideas are (a) minimalization of synonyms, hence full exploitation of existing terms, (b) maximum adherence to etymology; it is a well known fact that, in spite of explicit formulations, many people seek, for instance, the »analysis» in analytic sentences and are disappointed, and as a consequence hostilely biassed, if they do not find it.

(1) For discussions of ordinary languages, let us use 'logically true' and 'logically false' in their customary senses, which are, in my opinion, broader than those given them by Quine ('logically true' is rather to correspond to his 'analytic'). As a common

generic term, let us use '*determinate*', corresponding approximately to Bolzano's 'logically analytic'.

(2) Let us use '*factually true*' for 'true but not logically true', and, correspondingly, '*factually false*' and '*factual*'.

(3) For technical discourse on (interpreted) language-systems, let us use the terms '*L-true*', '*L-false*', '*L-determinate*', '*F-true*', '*F-false*', and '*factual*', respectively.

(4) Let us call sentences whose truth follows from the logic of truth-functions, characterized by Carnap successively as »*L-true by NTT*» and »*L-true by PL*»²¹ — '*tautologically true*' or '*tautological*', when referring to ordinary languages, '*T-true*', when referring to systems.

(5) Let us call sentences whose falsity follows from the logic of truth-functions '*contradictorily false*', '*contradictory*' and '*T-false*', respectively.

(6) Let us call any sentence, whether in ordinary languages or in systems, of the form ' $a = b$ ' '*an identity-sentence*'. The use of the terms 'identically true' and 'identical' as semantical predicates will be avoided.

(7) In non-technical discourse on ordinary language only, let us call sentences of the forms ' $A-B$ is B ' and ' $A-B$ is not B ' '*analytically true*', sentences of the forms ' $A-B$ is not B ' and ' $A-B$ is non- B ' '*analytically false*', sentences of either forms '*analytic*'. Only by explicit convention should it be allowed to use 'analytic' instead of 'analytically true' and 'contradictory' instead of 'analytically false', and this only if no collisions with the proposed standard usages of these words is to be feared.

The reader will have noticed that most proposed technical terms are in accord with Carnap's terminology.

Jerusalem, August 1947.

²¹ For a discussion of these terms, see Carnap, »Modalities and Quantification», The Journal of Symbolic Logic, vol. 11 (1946), pp. 33—64, especially p. 38 note 4.

The paper above is simultaneously published in »Methodos». It was offered to and was accepted by both periodicals. Because of postal difficulties — owing to the war in Israel at that time — the editors got no information of this circumstance.

The Editor.

The descriptive definition of the concept 'legal norm' proposed by Hans Kelsen

An elementary analytical and critical investigation

by

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Sect. 1. Introductory remarks about methodology

In this paper¹ we intend to describe and make more precise the descriptive definition of the concept 'general legal norm'² which Hans Kelsen implies in his writings; further we intend to point to two methods by which a descriptive definition may be tested and also present the result found after testing Kelsen's definition. It has been one of our primary aims to show that to establish statements like: »The author N. N. defines the con-

¹ This work was originally written in 1945. The author is indebted to professor C. L. Stevenson (University of Michigan), dr. juris. Torstein Eckhoff (University of Oslo) and professor Hans Kelsen (University of California at Berkeley) who read and commented upon an earlier draft of this manuscript. My thanks are also due to my wife Erna Ofstad for helping me to write better English.

² If we want to say something about the *term* general legal norm, we write »general legal norm»; if we intend to make a statement about the *concept* expressed by the term, we write 'general legal norm', and if our statement is about the objects to which the term refers, we write: general legal norm, without any quotation marks. From the second rule we will make one exception. Even a *term* or a *sentence* may appear within the marks: ' ', if this term or sentence occurs within a sentence which does already appear in quotations marks, as e. g. p. 132: »the term 'ought' is formal».

cept x in the following way . . . » may involve complexities and difficulties which can be met only by applying elementary analysis;³ even then such a statement gets only a shaky foundation. We consequently hope that the paper will also interest people not specially studying Kelsen's pure theory of law, so far as they have some methodological interest as to how a description of a descriptive definition may be carried out and as to how a descriptive definition may be tested.

By »a descriptive definition» we mean »a hypothesis as to how a certain term (or formulation) is used by certain persons in certain situations», i. e. a descriptive definition — as the term is used in this paper — is a hypothesis about a synonymity- or preciseness-relation between a definiendum-designation (formulation) and a definiens-designation (formulation).⁴

Several sub-classes of descriptive definitions are covered by the definition above. The analyst may claim that the definiens-designation is synonymous with or more precise than the definiendum-designation for each of the members of the linguistic group in question. On the other hand the analyst may claim only that the definiens-designation for *him* is synonymous with or more precise than the definiendum-designation; or he may hold that the definiens-designation expresses for him (or for another person) the same as or more precisely what the definiendum-designation expresses for the members of the linguistic group.

A descriptive definition of the first and second type is a hypothesis about intra-personal synonymity or preciseness, the third type is a hypothesis about inter-personal synonymity or preciseness.⁵

Kelsen's programmatic utterance: »From a comparison of all

³ The techniques of elementary analysis have been developed by Arne Næss in *Interpretation and Preciseness*, Ch. 5, *Principles of elementary analysis*, Universitets studentkontor, Oslo 1949. The present work relies especially on this chapter 5. (The work *Interpretation and Preciseness* will be referred to as I. P.)

⁴ Regarding these concepts, see I. P. Ch. 3 p. 25 f. and Ch. 5 p. 1—51.

⁵ I. P. Ch. 1 and 2.

the phenomena which go under the name of law, it (the pure theory of law) seeks to discover the nature of law itself»⁶ seems to confirm that he intends to give a descriptive definition of the concept 'law' and not only a normative definition which stipulates a meaning of the term independently of the actual usage of it. However, the following statement seems to show that he does not intend his definition to coincide more than roughly with so-called common usage: »This is not to say that it would be illegitimate to frame a narrower concept of law, not covering all the phenomena usually called »law«. We may define it with those terms which we wish to use as tools in our intellectual work. The only question is whether they will serve the theoretical purpose for which we have intended them. A concept of law whose extent roughly coincides with the common usage is obviously — circumstances otherwise being equal — to be preferred to a concept which is applicable only to a much narrower class of phenomena».⁷ And his statement »The common parlance, implying that validity and efficacy are both attributes of law, is misleading . . .»⁸ shows — if we may suppose that he intends to assert something about what he calls »the common parlance« — that he takes a critical attitude towards the usage which he is trying to define.

In spite of this rather disconfirming evidence, we think it rather safe to assume — in view of the first statement cited — that his definition at least has a descriptive pretension even if it at the same time expresses the normative definition which he thinks convenient.

It is only so far as his definition intends to be a description of actual usage that it is an object of our analysis and critique.

We are left without any evidence one way or the other, when

⁶ Hans Kelsen, *The Pure Theory of Law and Analytical Jurisprudence*, Harvard Law Review, Vol. 55, 1941, p. 44. (This article is referred to as H. L. R.)

⁷ Hans Kelsen, *General Theory of Law and State*, Harvard University Press, 1945, p. 4. (This work will be referred to as G. T.)

⁸ G. T. p. 40.

we ask ourselves whether Kelsen has intended a descriptive definition of the first, second, or third type, and whether it is meant to assert a synonymy- or a preciseness-relation (or something else). These concepts make explicit distinctions which most likely have not been considered by him. This brings us to a point of more general interest: the charge of the analyst against an author should perhaps more often be lack of definiteness of intention than ambiguity of formulations. In the latter case it is not excluded that the author may have thought clearly what he only expressed badly. We consequently see the value of analytical work more in view of its clarifying effect, than in view of its attempt to give an historically correct interpretation.

Having assumed that Kelsen wants to give something which plausibly may be interpreted as a descriptive definition of the concept 'law', we infer that his intention is the same regarding the concept 'general legal norm' since the term »general legal norm» in Kelsen's usage is more basic than the term »law»; the latter being defined in terms of the former.⁹

His definiendum is probably not the designation »general legal norm» only, *but what is expressed by* this designation and what may also be expressed by other ones, e. g. »rule of law» — »legal rule» — »legal norm» — »Rechtssatz» — »Rechtsgesetz». These expressions are at least occasionally used either with the same connotation as »general legal norm» or so as to include the denotation of this designation.¹⁰

Our field of observation is consequently those sentences in which Kelsen asserts something about the usage of the designation »general legal norm» or a synonymous designation or one including the denotation of these designations, and we must cautiously distinguish between formulations of this kind and sentences stating qualities of all things denoted by the term (a definite connotation presupposed). The latter class of formulations is not relevant for our investigation, and within the former

⁹ See e. g. G. T. p. 3.

¹⁰ Sometimes in this work we will use the shorter expression »legal norm». It is meant to be synonymous with the term »general legal norm».

class those only are relevant which do not only express a normative definition.¹¹

Nowhere in the writings of Kelsen have we found a complete descriptive definition of the designation »general legal norm» or of a synonymous term; but we have observed many formulations which we believe it plausible to interpret as asserting a conceptual characteristic (Begriffsmerkmal) of the concept in question.

Sentences of this latter kind we shall for the sake of word-economy call *DD_c-formulations*.¹²

It has been up to us to try to construct a complete definition on the basis of our interpretations of his DD_c-formulations; clearly this reduces our pretensions as to the correspondance between our description of his definition and what may have been his intention.

Given a definite formulation it is usually hard to determine whether a DD_c-proposition is expressed; this may partly be due to the fact that Kelsen has not considered the distinctions forming the basis of this concept and hence has not been able to choose a mode of expression which clearly shows the character of his formulation.

As tools in our analysis we will use the following three concepts; the two first of which Arne Næss has defined in the following way:

- (1) »The formulation T is *an interpretation* of the formulation U» shall signify the same as »There is at least one person in at least one situation for which T and U signify the same».¹³
- (2) »A formulation T is *more precise* than a formulation U» shall signify the same as »There are no interpretations of T which are not also interpretations of U and there is at

¹¹ Regarding the concept 'normative definition', see e. g. I. P. Ch. 3 and Max Black, *Critical Thinking*, N. Y., 1946, p. 189—190.

¹² »DD» stands for Descriptive Definition, »c» stands for characteristic.

¹³ Arne Næss, *En del elementære logiske emner*, Oslo, 1947, p. 21; see also I. P. Ch. I, for a more elaborated definition.

least one interpretation of U which is no interpretation of T».¹⁴

- (3) »A formulation T is an *explicatum* of a formulation U» shall signify the same as »The author of U would have accepted T as for him more precise than U if he had been aware of the possible interpretations: Y-V-W- . . . of the formulation U, which were for him intention-transcendent when U was asserted».¹⁵

This third concept may be helpful in describing the view of an author whose depth of intention is felt to be insufficient.

In accordance with our purpose of describing his descriptive definition, we also intend in Part II to subject his definition to some form of test. We shall use two different methods of testing. First we shall compare his DD_c-formulations with his formulations about the denotation of the term, that is, we shall compare formulations regarding connotation with those regarding denotation. If he gives examples of objects denoted by the designation »general legal norm», and if it should happen that these objects in our opinion should not possess the properties stated in the DD_c-formulations, this may be due to a false

¹⁴ *En del elementære logiske emner*, p. 36; see also I. P. Ch. I.

¹⁵ The assertion 'The formulation T is for the person P more precise than the formulation U' can be tested by systematic observations of the person's linguistic habits. However, sometimes it is useful to be able to assert that a certain formulation for a certain person is more precise than another one without committing oneself to the standpoint that this assertion would be confirmed by observations of his speech-habits. One wants to assert that the formulation in question would be more precise than the other one, if the person's speech-habits in a certain respect were different from what they are, and that they probably would have been different if he had been aware of certain phenomena which he was not aware of. The concept 'explicatum' may be useful for this purpose. Compare in this connection the discussion about so-called contrary to fact conditionals. Nelson Goodman, *The Problem of Counterfactual Conditionals*, *The Journal of Philosophy*, Vol. XLIV; Frederick Will, *The contrary-to-fact conditional*, *Mind* Vol. LVI. Regarding Carnap's use of the term »explicatum», see *Meaning and Necessity*, p. 8. Chicago 1947 and *Logical Foundations of Probability*, Ch. I, Chicago 1950.

opinion of his concerning the properties of the objects. But it will be very difficult in case of conflict to decide whether it is his formulations regarding denotation or his formulations regarding connotation which may be taken as representative of his deeper intention. We will assume that the probability of being in accordance with his intention is the greater when the formulations regarding the denotation are taken as representative. We choose this assumption because it may perhaps be more easy to have a false opinion as to the qualities which certain objects have in common, than a false opinion as to the objects which a term denotes.

These remarks give the basis for the following test: Supposing that Kelsen believes that the designation »general legal norm» is used to denote the objects: o_1, o_2, o_3, o_4 , is it true that they have in common the characteristic C_x which he has been interpreted to assert in a certain DD_c -formulation?

Further we shall apply a second method of testing. A descriptive definition is a hypothesis about the significance of a term, i. e. about the actual usage of the term within a certain group of people. And naturally we may ask if the term is used in the meaning indicated by the DD_c -formulations. This question cannot be answered without presupposing a definite field of application of the definition and some of Kelsen's statements seem to show that he primarily intends to cover the usage of jurists.¹⁶

Presupposing that his definition also intends to apply to the usage of the Norwegian synonym for »general legal norm» among Norwegian students of law, we will publish the results of an investigation carried out by the use of a questionnaire. This research had among other purposes also that of testing some DD_c -formulations proposed by Kelsen.

These remarks give the basis for the following test: Supposing that Kelsen with his DD_c -formulations intends to describe the usage of the designation »general legal norm» and its syno-

¹⁶ G. T. p. xv; see also *Reine Rechtslehre* (R. R.), Leipzig, Wien, 1934, p. 67.

nymys within a certain group of people, is this description confirmed or disconfirmed when confronted with the answers to questions directed to the people of this group concerning the way they use the term?

The application of this test-procedure implies that Kelsen's definiens-formulation is meant to be synonymous with or more precise than the definiendum-formulation for the members of the linguistic group in question. We have not been able to confirm this assumption.

PART I. ELEMENTARY ANALYSIS

Hypotheses about the conceptual characteristics of the concept 'general legal norm' as defined descriptively by Kelsen

Sect. 2. The legal norm is a pure norm

»Denn das Recht . . . ist Norm».¹⁷ We believe it reasonable to explicate this formulation as a DD_c-formulation, because we believe that he holds that nothing is called a legal norm unless it has the characteristics of a norm. His statement: »Since, by its nature, law is norm»,¹⁸ confirms this hypothesis.¹⁹ The term »das Recht» is used, we think, in somewhat the same meaning as »the system of legal norms constituting the law».

Legal norms are consequently a sub-class of the class of norms, and about the concept 'norm', Kelsen says »A norm is a rule stating that an individual ought to behave in a certain way».²⁰ We suppose that without any change of meaning the expression, »means the same as», may be substituted for the copula, *is*, in this formulation and that his formulation may be

¹⁷ R. R. p. 6.

¹⁸ G. T. p. 38.

¹⁹ Other and more direct ways of confirming statements saying that a certain formulation is an interpretation of another one, are elaborated in I. P. Ch. I. In addition to the method of elementary analysis — which is used in this work — Næss mentions the following four procedures (1) the method of synonymities, (2) the method of subsumption, (3) the method of derivation, and (4) the method of molar behavior patterns.

²⁰ H. L. R. p. 56, see also G. T. p. 30 f.

interpreted as a definition either describing or stipulating his own usage.

The expression, »ought to behave in a certain way», may refer only to what we will call pure norms or also to descriptive statements, e. g. technical norms.

The concept 'pure norm', we define normatively in this way: »A formulation given by a certain person expresses for him a pure norm if and only if the formulation is for him (1) synonymous with a formulation in the imperative mood or with a formulation which says or denies that something ought to be done or shall be done or must be done and (2) not synonymous with a descriptive formulation».²¹

We believe it most plausible that Kelsen holds that legal norms are pure norms; his utterance, »A statement to the effect that something ought to occur, is . . . not a statement about natural reality, i. e. actual events in nature»²² confirms that the second condition of synonymy in the definition of 'pure norm' is fulfilled. And his insistence on the use of the word, »ought», in the formulation of the legal norms makes it likely that he considers them as pure *norms* and not synonymous with value-judgements which use terms like »value» — »good» etc. and not terms like »ought» — »shall» etc.

We don't believe that Kelsen's standpoint saying that legal norms are synonymous with pure norms refers to the usage of the so-called historical givers of the legal norms. This criterion might be applicable to legal norms produced by an autocratic sovereign, but not within a democratic state. We feel very uncertain as to his criterion, but guess that it may be interpreted to refer among other things to a competence-group of jurists.

On the basis of this interpretation of Kelsen's definition of

²¹ Regarding this definition, see Harald Ofstad, *Objectivity of Norms and Value-judgments according to recent Scandinavian Philosophy*, (to be published in *Philosophy and Phenomenological Research*, U. S. A.); for a somewhat different definition, see Arne Næss, *Objectivity of Norms*, Universitets studentkontor, Oslo 1948.

²² G. T. p. 37, 40.

'norm' we propose the following characteristic of what he calls norms and consequently also characterizing what he believes are called legal norms:

C₁: x is for competent jurists (1) synonymous with a formulation in imperative mood or with a formulation which says or denies that something ought to be done or shall be done or must be done and (2) not synonymous with a descriptive formulation.

Sect. 3. The general legal norm as a hypothetical statement

»General legal norms always have the form of hypothetical statements». ²³ — »... die Rechtsnorm nicht, wie es von der traditionellen Lehre zumeist geschieht, so wie die Moralnorn als Imperativ, sondern als hypothetisches Urteil verstanden wird». ²⁴ »Wenn a, so soll b, lautet das Rechtsgesetz». ²⁵

The term »always» in the first formulation does not argue stronger in favour of explicating the formulation as a DD_c-formulation than as a statement saying that everything called a general legal norm has the property (not belonging to the descriptive definition of the concept) of being interpretable as a hypothetical statement.

However, we assume that the formulation plausibly may be explicated also as a DD_c-formulation. We don't believe that Kelsen holds that every general legal norm is created in this form, but rather that they all, for competent jurists, are synonymous with formulation of the type: »If A is, B ought to be». That the norm is »general» probably means that »A» stands for a type of situation and »B» for a type of sanction (cf. C₁). A judicial decision of a specific case will consequently not be a general norm.

We may advance the following characteristic:

C₂: x is for competent jurists synonymous with a formulation of the type »If A is, B ought to be».

²³ G. T. p. 38.

²⁴ R. R. p. 21, 22.

²⁵ *Allgemeine Staatslehre*, (A. S.), Berlin 1925, p. 47.

Sect. 4. The formal character of the copula »ought»

Both C_1 and C_2 refer to what may be called the logical structure of the legal norms and both of them stress the necessity of the copula »ought» in the formulation of the legal norms. About this copula Kelsen says: »Diese Kategorie des Rechts hat . . . einen rein *formalen Character*. Sie bleibt anwendbar, welchen Inhalt immer die so verknüpften Tatbestände haben . . .»²⁶

This statement covers an important ambiguity since Kelsen doesn't make clear whether it intends to characterize the copula »ought» when used by the law-researcher or when used by the legislator. It seems to be Kelsen's opinion that the statements of both these groups of people fit into the scheme »If A is, B ought to be».

We suppose that his statement refers to the meaning of the »ought» as used by the law-researchers. By accepting this hypothesis we get a partial explanation of why Kelsen puts forward the statement that the »ought» is formal.

The other part of the explanation (one of the possible explanations) is furnished by the following hypotheses: we don't believe that the expression »bleibt anwendbar» refers to grammatical rules; his formulation probably means something more than this: »the expression, 'If A is, B ought to be', is grammatically correct independently of what A or B is interpreted to designate». More likely Kelsen means that what is expressed by a statement corresponding to the scheme is — when advanced by the law-researchers — *valid* in one sense or other independently of what A and B are interpreted to designate.

If the hypothesis is accepted that Kelsen holds this last interpretation plausible, it is likely that he should feel motivated to make reservations on behalf of himself and other law-researchers lest they should be interpreted to mean by »valid»: »valid in the sense in which a moral norm may be said to be valid». We understand Kelsen to mean that validity of a moral norm is not independent of its contents.

²⁶ R. R. p. 24. (This italic and the following ones are due to H. O.)

We think that his statement that the »ought« is formal may be interpreted as such a reservation.

If we felt sure about this explanation, then his utterance about the formal character of the »ought« would only assert something about how to interpret certain statements within legal science and nothing about legal norms. However, the guess that he would not — if made to accept the distinction above — include the »ought« occurring in the legal norms within his reservation about its formal character, seems to us only slightly more confirmed than the guess that he would include it.

Accepting the latter guess as a plausible interpretation, and supposing that the quoted formulation may be explicated to imply that a norm is only *called* a legal norm if the copula »ought« has a »rein formalen Character«, we advance the following characteristic:

C₃₁: the verb »ought«, which occurs in x is formal in the sense that it gives x a meaning which makes competent jurists consider it implausible to interpret x as implying that x is valid in the sense in which a moral norm may be said to be valid.

A different explanation of why Kelsen says that the »ought« is formal, and a different precization²⁷ of what he means by saying it, is made likely if regard is taken to the italicized part of the following context of the quotation above: »Das Urteil, dass irgend etwas rechtlich normiert, dass irgendein Inhalt von Rechts wegen gesollt sei, ist niemals ganz frei von der Vorstellung, dass es so gut, so richtig, so gerecht sei. Und in diesem Sinn entbehrt die Begriffsbestimmung des Rechts als Norm und Sollen durch die positivistische Jurisprudenz des 19. Jahrhunderts tatsächlich nicht eines gewissen ideologischen Elements».²⁸
»Sie von ihm zu befreien, ist das Bemühen der Reinen Rechts-

²⁷ A formulation is called a precization of another one if the first one is more precise than the latter one. Compare the definition of »more precise than« p. 122—123.

²⁸ R. R. p. 21.

lehre . . .». As his own opinion of what a legal norm asserts, he states: »When A ist, so soll B sein, *ohne dass damit irgend etwas über den Wert, dass heisst über den moralischen oder politischen Wert dieses Zusammenhanges ausgesagt ist*».²⁹

It is not implausible to interpret the last part of this passage as asserting that legal norms are not pure norms or evaluative judgements at all.

The reason why we do not think it implausible may be indicated as follows:

The italicized passage mentioned above, is connected with something most essential in Kelsen's view as regards legal science: his anti-ideological thesis, stating that the law-researcher shall only *describe* the legal norms, not evaluate them in the sense of stating pure norms or evaluative statements as to how the law ought to be.³⁰

This anti-ideological thesis demands something from the researcher; but does it claim anything from that which Kelsen considers as the subject-matter of legal science: the legal norms?

It may be that Kelsen really holds that it does; he seems in any case to reason as if he held it. And we believe that this obscurity may be one of the reasons for his peculiar statement that the »ought» of the legal norms is formal. We base this hypothesis on three other ones, the two first of which are rather obvious: (1) Kelsen wants legal science to be free from statements offending his anti-ideological thesis; (2) he observes within works of legal science formulations of the kind »If A is, B ought to be»; (3) he does not, in those of his writings where he speaks about the formal character of the »ought», make a distinction between the meaning of the formulation, »If A is, B ought to be» when advanced by the law-researcher, and when given by the legislator. All these formulations seem to him to express pure norms not permitted by the anti-ideological thesis, unless special reservations are made to the contrary.

²⁹ R. R. p. 28.

³⁰ See e. g. G. T. p. 4 f. and R. R. p. 16 f.

Consequently he makes the reservation that the »ought« of these formulations is formal only; no pure norm is expressed.

However, from his own point of view it would have been sufficient if this reservation were limited to those formulations which are advanced by the law-researcher; but his lack of distinction — the possible cause of his finding it necessary to make a reservation — has the effect that his reservation is made without this distinction.

Our own opinion is that when formulations of the kind »If A is, B ought to be« occur in legal science, they do not usually express pure norms³¹ accepted by the law-researcher himself. The law-researcher uses this type of formulation in order to write down the contents of the legal norms; and usually not in order to express his own preferences. His statements may be formulated in accordance with the following scheme: »In the state S at the time t there is a legal norm of the following contents: If A is, B ought to be«; so far it would be clearer if the law-researcher wrote this whole statement, or put the expression: If A is, B ought to be, within quotation marks. Hence, we cannot see that it was necessary for Kelsen to make his reservation; and if it had been we cannot see how such a reservation could be of any help.

By virtue of the hypothesis here suggested, a confusion as regards semantical matters may be the cause of his formulation that the »ought« of the legal norms is formal; this namely: not to distinguish between different levels of language and to be unaware of the fact that one and the same formulation (»If A is, B ought to be«) may express different statements in two different contexts.

In view of this hypothesis we propose:

C₃₂: x is for competent jurists not synonymous with a pure norm or an evaluative statement.

³¹ Compare the definition of 'pure norm' p. 126.

The characteristic C_{3_2} is probably logically incompatible with the characteristic C_1 .³²

For some persons in some situations the formulation »the term 'ought' is formal» may be synonymous with »the term 'ought' does not fulfill a symbol-function».³³

It is not unlikely that this assertion at least may have been part of what Kelsen wanted to express.

Hence we advance:

C_{3_3} : the copula »ought» in x is formal in the sense that it does not have a symbol-function.

Remembering the sentence »Sie bleibt anwendbar, *welchen Inhalt immer* die so verknüpften Tatbestände haben . . .,» we may propose as our last hypothesis:

³² In view of his later writings, e. g. *The Pure Theory of Law and Analytical Jurisprudence and General Theory of Law and State*, C_{3_2} may seem to be a very implausible precization and the hypothesis providing the basis of it a faulty one. In these writings he has namely just emphasized the distinction mentioned in the third hypothesis above. However, our standpoint is not that Kelsen is unaware of this distinction today but only that he is very obscure on that point in those of his writings where he speaks about the formal character of the »ought». However, he is far from being clear on this point even in his later works. He says, »If jurisprudence is to present law as a system of valid norms the propositions by which it describes its object *must be* »ought» *propositions*, statements in which an »ought» not an »is» is expressed. But the propositions of jurisprudence are not themselves norms» (H. L. R. p. 51, see also G. T. p. 45.) Here a certain opinion seems to be implied, viz. that if the subject-matter of a science shall have certain definite qualities (being ought-formulations), it is necessary that science itself has these qualities, i. e. must be expressed in ought-formulations. That is, the knowledge of an object must be a kind of picture of that object. (Regarding these questions, see Eino Kaila, *Den mänskliga kunskapen*, Sth. 1939.)

According to Kelsen the formulations of legal science are at the same time ought-formulations and descriptive ones. It would be interesting to have him make more precise either their descriptive or normative sense.

³³ Regarding the concept 'symbol-function', see e. g. C. W. Morris, *Signs, Language and Behavior*, N. Y. 1946, and Eino Kaila, *Tänkens oro*, Helsingfors 1945, p. 176—182.

C₃₄: in the scheme »If A is, B ought to be», »A» may designate any kind of behavior and »B» any kind of sanction.³⁴

It is hard to get evidence within Kelsen's writings in order to decide which of these four hypotheses as to what he means by saying »Diese Kategorie des Rechts hat einen rein formalen Charakter» is the most plausible one. Perhaps none of them are very plausible, or perhaps a criterion constructed as a combination of two or more of them will best explicate his intention.

Sect. 5. The general legal norms as stipulating coercive acts

The characteristic to be advanced in this section makes a more definite statement about the contents of legal norms than C₁, C₂ and C₃.

»... jede Rechtsnorm eine Zwang anordnende Norm».³⁵ He reveals in other utterances that his intention here is to say something about the contents of the legal norms. »The only difference (between the legal order and other types of social orders) is that certain social orders themselves provide definite sanctions, whereas, in others, the sanctions consist in the automatic reaction of the community not expressly provided by the order».³⁶ »The problem of coercion ... is not the problem of securing the efficacy of rules, but the problem of the content of the rules».³⁷ In the light of these quotations which we interpret to imply a DD_c-formulation, the following conceptual characteristic is proposed:

C₄: x is for competent jurists synonymous with a formulation prescribing sanctions against certain persons.

Sect. 6. The validity of the general legal norms

It is not implausible that Kelsen implies the meaning of »valid» within the connotation of the concept 'norm'; he says:

³⁴ G. T. p. 113 gives confirming evidence for this interpretation.

³⁵ A. S. p. 47.

³⁶ G. T. p. 16.

³⁷ G. T. p. 29, see also p. 25.

»Rules of law, if valid, are norms»,³⁸ and this statement gives some confirmation for this hypothesis. But even if he is willing to call something »norm» without holding it valid, we don't think he holds something to be called a legal norm unless it is valid because he says: »Der Ausdruck »objektives Recht« ist im Grunde genommen, ein Pleonasmus. Denn das Recht ist seinem Wesen nach objektiv. Nicht objektives Recht wäre überhaupt kein Recht».³⁹ The term »objektiv» is, we suppose, used rather synonymously with »valid». Kelsen doesn't say for which persons he thinks the expression »objektives Recht» to be »ein Pleonasmus», probably the usage of jurists is the intended field of application of his statement.

As to what he means by the term »valid» he says »To say that a norm is valid for an individual means that the individual *ought to conduct himself* as the norm prescribes, it does not mean that . . . his conduct actually corresponds to the norm».⁴⁰

We interpret the passage to imply a definition of the definiendum »validity of a general legal norm». It is a curious definition because Kelsen applies the term »valid» as a predicate referring to norms, and here the definiens of the term »valid» is itself a norm-formulation.

We hold it probable that the definiens-formulation expresses what we have called a pure norm.

There are sentences within Kelsen's writings which seem to make probable that the sense in which he holds that legal norms are valid — »ought to be obeyed»⁴¹ — is parallel with the formal sense in which the term »valid» is used in the following statement: »If all men are birds and if Socrates is a man, then it is valid that Socrates is a bird».

Kelsen seems namely to mean that legal norms are valid only in the following sense: »If all legal norms within the

³⁸ G. T. p. 30.

³⁹ A. S. p. 54.

⁴⁰ H. L. R. p. 50, see also G. T. p. 112.

⁴¹ Our assumption is that the expression within quotation marks is a plausible interpretation of his definiens-formulation.

class A ought to be obeyed and if x is a member of the class A, then x ought to be obeyed».

That he uses »ought to be obeyed» in this formal sense is somewhat confirmed by the two following passages: »The pure theory of law operates with this basic norm as a hypothetical fundament. Presupposed that the basic norm is valid, the legal order dependent on this basic norm is also valid».⁴² »Whereas an 'is' statement is true because it agrees with the reality of sensuous experience, an 'ought' statement is a valid norm only if it belongs to such a valid system of norms, if it can be derived from a basic norm presupposed valid».⁴³

On the basis of these passages we propose the following characteristic:

C₅₁: it is possible to coordinate every x to a certain norm — called the basic norm — in such a way that the following relation is fulfilled: if the basic norm ought to be obeyed, then every x ought to be obeyed.

It is somewhat unlikely that this formal sense of the term »valid» is the *only* sense in which Kelsen holds legal norms valid. There are passages confirming our belief that he also attributes the characteristic »ought to be obeyed» to the legal norms in a non-hypothetical way. He says e. g.: »A legal rule forbids theft ... This rule is »valid» for all people ... The legal rule is »valid» particularly for those who actually steal and in so doing »violate» the rule».⁴⁴

It is not very probable that Kelsen would use the emphasized form »valid particularly for» if the only sense in which he held the theft-forbidding norm valid for the thief is the following one: »If you hold that the basic norm of this legal order ought to be obeyed, then you cannot without self-contradiction deny that the norm forbidding theft ought to be obeyed».

Consequently, it may be that he not only holds the state-

⁴² *Den rena rättsläran*, p. 221, Statsvetenskaplig Tidskrift 1933.

⁴³ G. T. p. 111.

⁴⁴ G. T. p. 30.

ment: »If the basic norm ought to be obeyed, then the legal norms ought to be obeyed» to be valid, but that he also holds that the basic norm and the legal norms themselves are valid in a so-called objective sense.

This standpoint may be interpreted in such a way that it is inconsistent with his assertion that legal norms cannot be true or false, but it is also possible that the sense in which he probably thinks that legal norms can be objectively valid is not the sense in which he thinks that they cannot.⁴⁶ However, we hold it quite probable that there is a logical inconsistency in his theory on this point due to the fact that he has not always kept in mind the implications of his standpoint that legal norms cannot be true or false.⁴⁷

We propose as a characteristic:

C_{5_2} : x is true.

The quotation on the basis of which we infer that he holds that legal norms cannot be true or false is the following one: »... das Rechtsgesetz zum Unterschied vom Naturgesetz (ist) keine Aussage über die Wirklichkeit, und daher nicht wahr oder falsch, sondern nur nützlich oder schädlich, zweckentsprechend oder zweckwidrig».⁴⁸

Kelsen does not say what he means by »true» and »false», but we guess that the following statement makes his standpoint somewhat more precise: »legal norms (and more generally: pure norms and pure evaluative judgements) are neither true

⁴⁶ Regarding different precizations of the term »objectively valid», see sect. 9 Re C_{5_2} , C_{5_3} , C_{5_3} .

⁴⁷ Axel Hägerström has attacked Kelsen for holding the view that pure norms (?) can be what is called »objectively valid». See Litteris 1928. However, Hägerström's article is a good example of philosophical analysis with far-reaching conclusions and insufficient elementary analysis; as far as we have been able to see, the only evidence which Hägerström gives for his statement is Kelsen's use of the term »Urteil» as referring to pure norms.

⁴⁸ *Die Entstehung des Kausalgesetzes aus dem Vergeltungsprinzip*, p. 120. The Journal of Unified Science, Vol. VIII.

a priori nor can they be empirically confirmed or disconfirmed in an intersubjective manner as the case is with descriptive observation-statements».

Assuming that Kelsen's standpoint can be explicated to imply this characteristic as a part of his descriptive definition, we advance:

C₅₃: x is neither true a priori nor can x be empirically confirmed or disconfirmed in an intersubjective manner.

Kelsen expresses the aim of the pure theory of law as regards the validity of the legal norms: »Sie will nur ins Bewusstsein heben, was *alle Juristen* — zumeist unbewusst — tun, wenn sie im Begreifen ihres Gegenstandes ... dieses positive Recht als eine gültige Ordnung, nicht als blosses Faktum von Motivationszusammenhängen, sondern als Norm verstehen».⁴⁹

This passage argues in favour of believing that his definition of »valid» as »ought to be obeyed» intends to have a wider field of application than his own usage. Probably his definition pretends to cover the usage of »alle Juristen» which is the group of people whose usage we suppose Kelsen is primarily trying to define.

It is of course far from certain that his definition intends to cover this wide field of usage. However, even if we make the assumption that it does, it does not follow that he holds the definiendum-expression, »valid», and the definiens-expression, »ought to be obeyed», to be *synonymous* for jurists. He says namely that what he is going to uncover is more or less »unbewusst» for jurists, and this makes it likely that he must be explicated to hold the relation between the definiendum-expression and definiens-expression to be an explication- or preciseness-relation.

The expression, »objektives Recht», is, he says, »im Grunde genommen, ein Pleonasmus».⁵⁰ Previously we have assumed

⁴⁹ R. R. p. 67.

⁵⁰ A. S. p. 54.

that the term »objektiv» is used rather synonymously with »valid» and that the whole statement refers to the usage of jurists. The use of the expression, »Pleonasmus», makes likely that Kelsen holds the expressions, »legal norm» and »valid legal norm», to be synonymous for jurists.

It is possible that Kelsen may think that the two expressions: »legal norm» and »valid legal norm» are synonymous for jurists whereas he does not think so about »valid» and »ought to be obeyed». This would imply that even if the statement »a legal norm is a valid legal norm» has a high degree of analyticity for jurists it does not follow that the statement obtained by substituting the definiens-expression »ought to be obeyed» for the term, »valid», has the same degree of analyticity for the persons in question. It would furthermore imply that questions aiming at disclosing a synonymy-relation between the formulations: »x is a legal norm» and »x is a legal norm and ought to be obeyed», might be answered negatively without thereby disconfirming any statement made by Kelsen.

In spite of his use of the term »unbewusst», we guess it to be unlikely that he would hold the statement, »a legal norm is valid», to be a »Pleonasmus» for jurists and at the same time hold the statement obtained by substituting the definiens-expression, »ought to be obeyed», for the definiendum »valid», to be synthetic as used by jurists. Hence we consider it likely that negative answers might be treated as disconfirming. The relevancy of positive answers is independent of the assumption above. Every positive answer may be said to show that the usage Kelsen tried to define was not that much »unbewusst» as he believed.

We advance consequently:

C_{5.4}: jurists do not call a prescription⁵¹ a legal norm unless they think it valid in the sense that it ought to be obeyed.

C_{5.4} makes explicit the possibility that the term, »legal norm»,

⁵¹ The term prescription is used synonymously with the term pure norm.

is used as a laudatory term by jurists, i. e. as a term with an eulogistic function. Our empirical tests of C_{54} in sect. 10 will therefore be an empirical approach to one aspect of the problem of so-called »persuasive definitions».⁵²

At the end of this section we may mention a characteristic of general legal norms which refer to the reasons jurists will give for their validity. We believe that this characteristic may be extracted from the following passage: »... a legal norm is valid because it has come into being in the way prescribed by another norm. This is the principle of validity peculiar to positive law».⁵³

Let us compare this passage with the following one: »If one asks the reason for the validity of ... the general norms ... the answer runs: »... (they) are valid because they were created in accordance with the constitution. The norm from which the constitution derives its validity is the basic norm of the legal order».⁵⁴

If the term »valid» in the first quotation is used in accordance with his definition: »ought to be obeyed», and if the expression, »they are valid», is interpreted as »they are thought to be valid (in the previous sense) by jurists, then we seem to have evidence for advancing as a possible DD_c -formulation:

C_6 : jurists hold that x ought to be obeyed because it was created in accordance with certain other x .

It is of course not excluded that a conceptual characteristic constructed as a combination of two or more of the C_5 -characteristics will best catch his intention.

Sect. 7. The efficacy of the legal norms

Kelsen says: »The common parlance, implying that validity and efficacy are both attributes of law, is misleading».⁵⁵ This

⁵² Regarding the terms »laudatory term» and »persuasive definition», see

C. L. Stevenson, *Ethics and Language*, New Haven 1944.

⁵³ H. L. R. p. 63.

⁵⁴ H. L. R. p. 63.

⁵⁵ G. T. p. 40.

seems to show that he does not include within his definition any characteristic referring to the efficacy of the legal norms.

This interpretation is supported by his statement that legal norms are »by nature norms»⁵⁶ and norms are *Sinn* — *meaning*.⁵⁷ It is further confirmed by his standpoint that the coercive element of law refers to the contents of the legal norms and not to the actual behavior of individuals.⁵⁸

These statements make probable that he intends to define the concept 'general legal norm' as a class of norms with certain specific properties in common.

However, other passages give a different impression. As e. g.: »If a legal order loses its efficacy for any reason, then jurisprudence regards its norms as no longer valid. Still, the distinction between validity and efficacy is a necessary one, for it is possible that in a legal order which is *on the whole efficacious, and hence regarded as valid*, a single legal norm may be valid but not efficacious in a concrete instance, because as a matter of fact, it was not obeyed or applied although it ought to have been».⁵⁹

This statement shows that Kelsen holds that jurists call a legal order valid only if it is on the whole efficacious, and we have previously interpreted Kelsen to include »valid» within the connotation of the concept 'general legal norm'.

Hence it seems probable that 'efficacy' none the less may be interpreted to be a characteristic of a legal order and consequently of general legal norms.

Since Kelsen holds that all general legal norms are sanction-stipulating and since »efficacious» for Kelsen means that the prescribed behavior is performed,⁶⁰ it further follows that the

⁵⁶ G. T. p. 38.

⁵⁷ R. R. p. 33—36. (The italicizing of the terms *Sinn*, *meaning*, *reality* which will occur sometimes in the following, is made just to remind about the ambiguity of these terms.)

⁵⁸ G. T. p. 29.

⁵⁹ H. L. R. p. 50—51.

⁶⁰ G. T. p. 40.

element of coercion in Kelsen's definition does not refer only to the contents of the prescriptions, but also to the actual behavior of certain persons.

The hypothesis that he includes the efficacy of the legal norms within his descriptive definition seems to us only slightly more probable than the hypothesis that he does not. An argument in favour of the first hypothesis is that it seems very unlikely that he defines 'general legal norm' descriptively in such a way that every person able to write can produce such norms. The second hypothesis, on the other hand, is confirmed by his desire to define 'law' as a class of norms and keep away from the subject-matter of what he calls sociological jurisprudence. He may explain the quotation above by saying that efficacy is a *condition* of validity but neither a part of the *meaning* of the term »valid», nor of the meaning of terms like »law» — »general legal norm» etc.

If Kelsen intended to give a descriptive definition of such a kind that knowledge about the characteristics enumerated in the definiens-formulation would be necessary and sufficient in order to make reliable predictions of the occurrence of the term »general legal norm», then 'efficacy' would have to be one of the characteristics since by disregarding this characteristic one would be unable to find out whether the characteristic 'valid' was present or not.

We have previously said that Kelsen's writings do not show clearly what kind of descriptive definition he wants to give; it may be that he does not intend his definition to be of the kind indicated above; if so the last quotation argues less strongly for including 'efficacy' as a characteristic.

In order to avoid taking a definite standpoint as to whether 'efficacy' is included in his descriptive definition or not, we will in sect. 8 give two alternative descriptions of his descriptive definition.

If the term, »efficacy», refers only to the behavior of the officials of the state, then a legal order may be efficacious without implying any limit as to the frequency of penalized beha-

vior by the citizens of the society. It seems probable that Kelsen thinks efficacy in this sense to be a sufficient criterion of effectiveness of a legal order. He says »... normative jurisprudence asserts the validity of a norm ... only when that norm belongs to a legal order which as a whole is efficacious, i. e. when the norms of this order are, by and large, obeyed by the subjects of the order and, *if not obeyed, are by and large applied by its organs*».⁶¹

This quotation indicates that obedience by the subjects (by and large) is *also* a sufficient criterion of effectiveness. Other utterances, however, make it somewhat unlikely that he holds this to be the case. He says e. g. that it is an unavoidable consequence of the effectiveness of a legal order that »there exists a certain degree of probability that the sanctions stipulated by the order will be actually carried out ...»⁶² This consequence does not follow if the expression »effectiveness of a legal order» is interpreted to refer only to the behavior of the non-official individuals obeying the legal norms.

That he does not consider the two criteria quite equal is further confirmed e. g. by »... though the efficacy of the law is primarily its being applied by the proper organ, *secondarily* its efficacy means its being obeyed by the subjects».⁶³

In the light of these passages we advance the following two different hypotheses:

- C_{7_1} : x belongs to a system of prescriptions which are on the whole applied, i. e. obeyed by certain organs of the society.
- C_{7_2} : x belongs to a system of prescriptions which are *either* on the whole applied, i. e. obeyed by certain organs of the society, *or* on the whole obeyed by the individuals in the sense that the frequency of different kinds of penalized behavior within the society is beyond a certain limit.

⁶¹ G. T. p. 170.

⁶² G. T. p. 171.

⁶³ G. T. p. 62.

Sect. 8. The combination of the different conceptual characteristics in order to get complete descriptive definitions

We have not been able to find any other DD_c -formulations and the question arises concerning the construction of a complete hypothesis about his descriptive definition on the basis of those we have found. We cannot formulate all possible hypotheses; obviously we may get a very large number by combining the DD_c -formulations in different ways.

Certainly not all of these hypotheses will have the same degree of plausibility as an interpretation of Kelsen's intention. Strictly speaking only one of them can cover his intention, but when the mode of language is so unprecise as Kelsen's on this point — especially regarding the elementary distinction between what is called object-language and meta-language⁶⁴ — it is like a fiction to speak about a definite intention at all. So far we may say that we have not succeeded in describing any definite descriptive definition; we have been able to put forward but a number of different explicata.

It must be admitted that Kelsen is perhaps not much to be blamed on this account. The definition that we have been searching for is one only implied in his propositions not formulated explicitly in a complete descriptive definition. But his programmatic utterance: »From a comparison of all the phenomena which go under the name of law, it (the pure theory of law) seeks to discover the nature of law itself . . .»⁶⁵ argues in favour of making him responsible for his probable lack of definiteness of intention on this point.

Most probably the quoted formulation does not for Kelsen have a high degree of preciseness and his lack of clarity may be due to his obscurity as to his own aim.

As mentioned in sect. 7 there are statements within Kelsen's writings which argue in favour of excluding the characteristic

⁶⁴ Regarding this distinction, see Rudolf Carnap, *Logical Syntax of Language*, N. Y. 1937.

⁶⁵ H. L. R. p. 44.

C_7 (the efficacy of the legal norms) from his descriptive definition. He says e. g. about the sanction-stipulating contents of the general legal norms that »by this very fact and *only by this fact*»⁶⁶ can a legal order be distinguished from other kinds of regulating orders. If decisive regard is taken to statements of this kind, then the hypothesis about his descriptive definition which seems most warranted is probably the following:

x is called a general legal norm by jurists (the group whose usage we think he primarily wants to describe) if and only if the following statements are true:

1. x is for competent jurists synonymous with a formulation which says or denies that something ought to be done or shall be done or must be done, and not synonymous with a descriptive formulation (C_1).
2. x is for competent jurists synonymous with a formulation of the type »If A is, B ought to be» (C_2).
3. x is for competent jurists synonymous with a formulation prescribing sanctions against certain persons (C_4).
4. x belongs to such a system of norms that it is possible to coordinate every x to a certain norm — called the basic norm — in such a way that the following relation is fulfilled: if this basic norm ought to be obeyed, then every x ought to be obeyed (C_{5_1}).

This description of his descriptive definition may be called *description 1*.

In spite of the fact that description 1 is advanced on the basis of more or less systematic observations and interpretations of Kelsen's utterances, we regard it as a rather implausible explicatum of what he probably wanted to express.

It is unlikely that Kelsen thinks the term, »general legal norm», may be given a descriptive definition in terms referring only to the contents of norms. Of course lots of norms may be formulated which have the characteristics C_1 ; C_2 ; C_4 and C_{5_1} without being called »general legal norms».

⁶⁶ G. T. p. 25.

As mentioned in sect. 7 we will therefore give a description 2 of his definition which includes a characteristic referring to the efficacy.

The question arises as to why Kelsen advances statements which seem to be incompatible as far as including a characteristic of this sort is concerned.

It does not need much thought to see that he felt motivated to include such a characteristic. Otherwise he would have defined the concept 'general legal norm' — and hence the concept 'law' — in such a way that legal norms could be created at random by everyone able to write.

The reason why he felt motivated to exclude this characteristic from his definition is explained somewhat by these passages: »Only if law and natural reality ... the »ought« and the »is«, are two different realms, may reality conform with or contradict law, can human behavior be characterized as legal or illegal».⁶⁷ — »The efficacy of law belongs to the realm of *reality* ...»⁶⁸

It seems as if Kelsen believes that the efficacy of the legal norms must be excluded from the definition of 'general legal norm' (and from the concept 'law'), since otherwise legal norms would have to be interpreted as what he calls »is-statements».⁶⁹

This is a strange position. It may partly be explained by the hypothesis, that he is unacquainted with logics of relations and disposed to think in terms of Aristotelian class-logic. This makes him disposed to think of the concept 'legal norm', (or the concept 'law') as a class of norms with certain specific properties in common. However, to say that the term »general legal norm«, designates a class of norms with the common quality that they are on the whole obeyed (efficacious), seems incorrect because it is not usual to call the obeying of a norm

⁶⁷ G. T. p. 121.

⁶⁸ G. T. p. 121.

⁶⁹ Compare G. T. p. 120—121.

a *quality* of a norm. If we suppose that his conceptual tools make him think — more or less consciously — in this way, then one may perhaps understand why the interpretation of the general legal norms themselves as what he calls »is-statements» seemed to him the only possible — but unacceptable — way in which a reference to the actual efficacy could be included in the definition.

By constructing the concept 'general legal norm', as a relational-concept it is possible to include the 'efficacy' of the norms as a characteristic without getting into the trouble that Kelsen probably thought likely. We will do this in the following and more fully in the conclusion.

If we include the characteristic referring to the efficacy which we think most likely to express Kelsen's intention — namely C_7 — then we may propose as another alternative explication: *description 2*:

*x is called a general legal norm by jurists if and only if the following statements are true:*⁷⁰

1. x is for competent jurists synonymous with a formulation which says or denies that something ought to be done or shall be done or must be done, and not synonymous with a descriptive formulation (C_1).
2. x is for competent jurists synonymous with a formulation of the type »If A is, B ought to be» (C_2).
3. x is for competent jurists synonymous with a formulation prescribing sanctions against certain persons (C_4).

⁷⁰ The conjunction of the statements enumerated from 1—6 gives one possible analysis of Kelsen's definition. Neither this compound statement nor any of its components pretend to be synonymous (compare definitions of 'synonymity' in I. P. Ch. I) with any statement advanced by Kelsen. However, our analysis pretends to consist of precisizations and explicata of some of his formulations. This type of empirical precision-analysis does consequently not meet the problem of the so-called »Paradox of Analysis». Regarding this »paradox», see the discussion between Max Black and Morton White in *Mind* 1944 and 1945, and the discussion between Rudolf Carnap and L. Linsky in *Philosophy of Science*, Oct. 1949.

4. x belongs to such a system of norms that it is possible to coordinate every x to a certain norm — called the basic norm — in such a way that the following relation is fulfilled: if this basic norm ought to be obeyed, then every x ought to be obeyed (C_{5_1}).
5. x is not called a general legal norm unless x is held to be valid in the sense that it ought to be obeyed (C_{5_4}).
6. x belongs to a system of prescriptions which are on the whole applied i. e. obeyed by the organs of the society, (C_{7_1}).

By bringing his descriptive definition on etjunctive form it becomes easier to check as far as logical or empirical inconsistencies are concerned. Both in description 1 and 2 we have interpreted Kelsen in such a way that the logical inconsistency which would result from including C_{3_2} in his definition (x is a pure norm — x is not a pure norm) has been omitted. In the same way we have avoided the inconsistency which would result from including C_{5_2} and C_{5_3} (x is true — x cannot be true). However, the logical inconsistency between description 1 and description 2 has been emphasized.

As previously indicated it is the definition described in description 1 which seems to be deepest rooted in Kelsen's heart; since this definition makes the concept pure in the sense that all reference to non-verbal reality is left out.

To us it seems like a probable hypothesis that the confused discussion whether »legal norm» (»law») designates a class of verbal expressions (norms) *or* a class of non-verbal facts has been facilitated by Aristotelian class-logic. The designation »general legal norm», is not a thing-name designating *either* verbal expressions *or* non-verbal behavior; it is a relational term designating both,⁷¹ i. e. certain prescriptions standing in certain relations to a certain verbal and non-verbal behavior.

⁷¹ Compare the analysis which C. W. Morris gives of the concept 'experience' in *Foundation of the Theory of Signs*, International Encyclopedia of Unified Science, Vol. I no. 2, Chicago 1938.

So there is no dualism in the view holding that the law is at the same time both *meaning* and *reality*; this dualism only occurs if the analyst is unacquainted with terms designating relations.

At this point it may be illustrative to compare Kelsen's definition with the descriptive definition which has been proposed by Professor Alf Ross. Both authors may be interpreted to claim the usage of jurists as the primary field of application of their definition. A comparison is especially interesting since Ross explicitly has tried to solve what he considers to be a dualism between the element of *meaning* and the element of *reality* in the concept of 'law'. Ross solves this dualism by trying to show that the term »general legal norm» designates a class of phenomena belonging entirely to the *realm of reality* whereas Kelsen is inclined to solve the dualism by trying to show that »general legal norm» designates a class of phenomena belonging entirely to the *realm of meaning*.

In a work entitled, »The descriptive definition of the concept 'legal norm' proposed by Alf Ross» published as »Filosofiske Problemer» (nr. 13) (in Norwegian) we proposed the following description of his descriptive definition:

x is called a general legal norm by jurists if and only if the following statements are true:

1. x is for competent jurists synonymous with an imperative formulation or with a formulation which says or denies that something ought to be done or shall be done or must be done, and x is not synonymous for them with a descriptive formulation.
2. x is given in order to increase the probability that certain persons in certain situations shall react in certain ways.
3. x is characterized by the existence of a causal connection between the non-interested attitude of the givers of x when they obey certain x, and the fact that x is given with a linguistic form which makes it plausible to inter-

pret x as an assertion saying that these or those persons have a duty to do so or so.

4. x is characterized by the following attitude of those persons who obey x («obey» both in the sense of performing prescribed behavior and in the sense of avoiding penalized behavior):
 - a. in the majority of those cases where obedience in the sense above is relevant, it is more likely that obedience will occur than non-obedience.
 - b. in the majority of those cases where obedience occurs, one will find that this reaction is not performed in order to obtain satisfaction of certain primary or secondary drives; but the performance is elicited by social suggestion functioning as an unconditioned stimuli. (Performance of this kind is called non-interested performance).
 - c. in those cases where the performance is not non-interested, it is elicited by fear of sanctions. (Performance of this kind is called interested performance).
 - d. the fact that certain acts of obedience are performed as interested behavior is a sufficient condition for the occurrence of social suggestion which will change the motivation from interested to non-interested.
 - e. the fact that certain acts of obedience are performed as non-interested behavior makes it easier in many cases for the givers of x to stipulate sanctions for behavior which was previously free from sanctions.
5. x belongs to the system of prescriptions of which it is true that the prescriptions are (were) on the whole obeyed by the persons who are supposed to obey them, and of which system it also is true that the frequency of different kinds of penalized behavior is (was) within a certain limit.

The most conspicuous difference between this definition and Kelsen's is that Ross explicitly refers to the attitude of the persons obeying the prescriptions.

Only those prescriptions are called legal norms which are obeyed from an attitude of the kind described in 4.

Our sociological material in sect. 10 will have some bearing on the question as to whether the attitude of the performers (the motive of the obedience) must be included within an adequate descriptive definition which has the usage of jurists as intended field of application.

It is Ross's theory that the designation »general legal norm» designates a class of human behavior. This behavior is partly of a verbal and partly of a non-verbal nature, but also the verbal expressions (the prescriptions) are only behavior and not meaningful propositions. By asserting this point of view Ross intends to oppose so-called traditional ways of defining this concept (including Kelsen's definition).

One of the reasons why Ross defines the concept 'general legal norm' in terms of human behavior is because he holds that all attempts to define it so as to include both *meaning* and *reality* will cause inconsistencies in the concept. As will be clear by now we think that Ross shares this opinion with Kelsen; and in both instances the opinion may be due to the use of anti-que conceptual models.

Ross tried to solve what he considered to be a dualism by trying to show that the term »general legal norm» refers only to what he calls *reality*. In relation to description 1 of Kelsen's definition *he* tried to solve this pseudo-problem by excluding the element of *reality* and trying to show that the term designates only what he calls *meaning*.⁷²

We have mentioned why Kelsen is unsatisfied with this definition and is moved towards the definition formulated in description 2. In order to avoid inconsistencies this definition must be interpreted as describing a relational concept. Interpreted as a class-concept it would namely claim of the objects of the denotation that they have the property of being verbal

⁷² R. R. p. 11.

expressions and the property of not being verbal expressions (but certain acts of performance).

However, Ross's definition described above must itself be interpreted as describing a relational concept in order to avoid the same inconsistency.⁷³

(To be continued).

⁷³ Harald Ofstad, *Alf Ross's begrepsbestemmelse av begrepet 'rettsregel'*. Universitetets studentkontor, Oslo 1949, p. 34.

DISCUSSION

Benses Charakteristik einer ternären Logik. Von J ü r g e n v. K e m p s k i (Hembsen i/Westf.).

In Heft 1, S. 78—81 hat Max Bense eine Charakteristik einer ternären Logik zu geben versucht. Halten wir uns an den Aussagenkalkül, so würden in dessen »ternärer« Form die logischen Konstanten Verknüpfungen von drei Aussagen darstellen, während der übliche, von Bense »binär« genannte mit Verknüpfungen von zwei Aussagen als logischen Konstanten arbeitet, wie z. B. mit »und«, »oder«, »wenn ... so ...« usw.

Die ternären Verknüpfungen sollen nicht »aus binären Verknüpfungen bestimmt« sein, sie sollen nicht aus »binären« Verknüpfungen »zusammengesetzt« »und also reduzierbar« auf solche sein. Der Wahrheitswert einer »ternären« Verknüpfung hänge von den Wahrheitswerten dieser Aussagen ab.

Wenn, so sagt nun Herr Bense, »in einer solchen ternären Logik ebenfalls ein wahrheitsfunktionentheoretischer Aufbau möglich sein soll, müssen ternäre Matrizen konstruierbar sein«. Das hört sich nun zwar gewaltig gelehrt an, ist aber *trivial* und brauchte nicht auf fast zwei Seiten mit einem Aufwand an Tabellen gezeigt zu werden.

Man erhält dann analog zu den »16 möglichen Matrizen ... in der binären Logik« »256 mögliche Matrizen ... in der ternären Logik«.

Sei nun $F(p, q, r)$ eine Aussagenverknüpfung, so ist es nicht schwer, für jede der 256 Matrizen eine Aussagenverknüpfung mit Hilfe der »binären« logischen Konstanten anzugeben, so dass diese Aussagenverknüpfung in bezug auf ihren Wahrheitswert genau durch die betreffende Matrix (nicht wie Herr Bense in der Sprache des graphischen Gewerbes sagt: »Matrize«) charakterisiert ist.

Nun hat Herr Bense einen Fall angegeben, in dem das nicht zutreffen soll, die von ihm sogenannte »Triäquivalenz«. Sie ist dann und nur dann

wahr, wenn entweder alle drei Aussagen wahr oder alle drei falsch sind. Sollte er wirklich nicht wissen, dass das genau zutrifft für:

$$(p \equiv q) \cdot (q \equiv r)?$$

Wenn seine »ternäre« Verknüpfung damit nicht »aus binären Verknüpfungen bestimmt«, also auf solche »reduzierbar« ist, müsste er erläutern, was er eigentlich unter »bestimmt aus« und »reduzierbar auf« in diesem Zusammenhang versteht. Bis dahin wird man diesen Teil seiner Ausführungen für *falsch* halten müssen.

Aber Herr Bense gibt noch ein anderes Beispiel, die »Assoziation«:

$$F_a(p, q, r) \equiv (p(q, r) \equiv (p, q)r).$$

»Die Matrize (!) für F_a ist in allen Fällen wahr, in denen

$$p(q, r) \equiv (p, q)r$$

erfüllt ist. Diese Forderung ist unabhängig davon, ob p , q und r wahr oder falsch sind ... Evident entspricht die Assoziation in der ternären Logik dem, was in der binären Logik als Tautologie bekannt ist.»

Dieser Teil der Ausführungen von Herrn Bense kann deshalb nicht widerlegt werden, weil er schlechthin *sinnlos* ist. Das zu erläutern, hiesse Anfängerunterricht in der mathematischen Logik erteilen. Dazu ist hier nicht der Ort.

Ich füge noch hinzu, dass alle mir bisher bekannt gewordenen »Beiträge« des Herrn Bense zur mathematischen Logik die gleiche charakteristische und sozusagen »ternäre« Mischung aus trivialen, falschen und sinnlosen Bestandteilen aufweisen.

REVIEWS

Gunnar Johansson: *Configurations in event perception*.
Almqvist & Wiksells Boktryckeri AB. Uppsala 1950. Pp. 226.

Gestalt psychologists have often excelled in the arranging of experiments and in the variation of their conditions. Gunnar Johansson's dissertation is no exception to this rule, and one might even question whether it is at all possible to find, within the frame-work of Gestalt psychology, such a mastery of technical difficulties as in this work. The problem of perceptual psychology that Johansson has posed and made it his task to elucidate may be broadly formulated thus: what are the laws that govern the perception of motion, the organization of a perceptual field where motion is experienced? A pupil of Katz, his theoretical and methodological starting-point is that of Gestalt-psychology in general. He is careful not to theorize very much and keeps to the problem defined in the experimental situation. The latter he illustrates with an example from everyday life. Let us regard a birch tree in a motionless state — as in a photo. It is then experienced as a closed, relatively undifferentiated whole, the configurational effect of which is principally determined by the exterior contours. But when the wind moves the tree there is experienced, alongside the total whole, inferior, closed wholes consisting of branches and leaves: a differentiation takes place and at the same time there occurs an augmented influence from the part of the total whole. Pointing to the fact that gestalt laws hitherto formulated explain only the organization of static configurations — the main field of exploration within this psychology — but not the organization of dynamic, continually changing ones, the author tries to investigate exactly the latter. It is true that Wertheimer, as well as Duncker, Rubin and Metzger, but also Katz, Oppenheimer and others have touched on similar problems, but none of them has adopted the special method used in the present research: a stimulus configuration where 1—6 stimuli change continually (cyclically) and where there is a possibility of

varying the relative amount of changes per unit of time and of adjusting at will the cyclical phases in relation to each other. For this purpose Johansson constructed a great many ingenious apparatuses, and there seems to be but little to add in the way of technical perfection. Perhaps, however, when scrutinizing the experimental situation, one might find it desirable that the Os should have been shut out from a direct view of the experimental contrivance with all the moving wheels — which does not seem to have taken place in the first experimental series. One also misses a measure of intensity of light in the different optical experiments as well as of the dark-adaptation in every special case.

This research has aimed at giving as full an account as possible of the patterns of interference between stimuli in movement within each of the sense modalities. Even if on technical grounds the accent lies upon the visual field, Johansson has succeeded in creating corresponding experimental conditions with acoustical as well as with vibratory and tactile stimuli. Seventy different experiments have been devised. The optical stimulus has been varied as to the amount of the part stimuli (1—6) and their localisation, the form and (cyclical) frequency of the motion, the intensity and the quality of the part stimuli. Combinations between intensity and quality changes, only to mention one possible combination, have also been arranged. The basic relation between the periodically changing part stimuli is the time relation, or the phase relation, which may be varied from 0 to 360° .

An example may be necessary to concretize the basic experimental device (cit. from the author): »Four dark points, 3 mm in diameter, are projected on to a bright homogeneous background. They are arranged along a horizontal line, and the points are 12 mm apart respectively. As in the previous experiments, the frequency is 0.7 c (cycles)/sec.» The two outer points are moving diagonally (30° inclination) up and down, the two inner ones along vertical paths. The end points of all the paths are situated in the same two parallel horizontal planes. The perception of this stimulus configuration is the following: one group is formed by the two outer points, and one of the two inner ones, and at the same time there is a totalizing perception in the form of a line. The line of points moves regularly up and down, and at the same time the two outer points move *horizontally* along the common line. The perception of the movement of the two outer points, for example, is termed »event perception», the perception of the whole moving field is termed »the perception of an event configuration». This example can be used to illustrate some important findings: the principles called »dissociation of systems of reference» including »motion analysis» and »motion synthesis». Motion analysis is exemplified by the sloping motion of the two outer points being in perception so to speak analyzed into its two components or vectors, in accord-

ance with a strictly mechanical analysis of the motion: a horizontal and a vertical one. The common vertical motion of the four points forming a moving line is the expression of motion synthesis. Analogous phenomena have been observed and discussed by Rubin, Duncker, Oppenheimer and Wallach, but Johansson pursues the analysis still further — varying the geometrical form of the motion, the phase relations and the length of the paths of the part stimuli — and he is able to formulate a number of laws connecting the configuration of the stimuli and the perceptual organization. Thus among other things he points to the fact that motion configuration, not the spatial configurations, is of primary importance in the perception of moving objects. Other principles of extreme importance in motion perception are »the law of the common motion state» (analogous to Wertheimer's »Faktor des gemeinsamen Schicksals»), »the law of the divergent motion states» (in connection with Katz) and »the principle of lowest velocity». Johansson acknowledges viewing, as does Duncker, the phenomena in question under the general heading of the figure — ground phenomenon (Rubin). In contrast to Duncker, however, he rejects — and obviously justifiably — the assumption that spatial relations are of supreme importance in the formation of what he terms »the relational hierarchy in the perception of motion».

The main body of experiments, leading to the formulation of the principles just mentioned, has been a number of so-called Lissajou's figures, modified for the special purpose: two points moving rhythmically in the same optical field along paths that may be arranged in many different ways: rectilinear or circular, horizontally, vertically or at varying angles in relation to each other, etc. In every case there results an interference between the two stimuli.

As mentioned in the foregoing, Johansson extends his researches over many sensory fields. In the optical field too, he does not restrict himself to moving stimuli, but also investigates the genesis of perceptual configurations formed in connection with periodical changes in the light intensity of two stimuli, and periodically changing colours (two stimuli, cyclically changing from red to green by means of colour mixing). In the experiments where the two optical stimuli — which are out of phase — are periodically changing their intensity only, there is observed a phenomenon described as a luminous body passing to and fro in the space between two light windows. No changes in the phenomenal field are seen to take place except the moving, but otherwise qualitatively unchanged »light phantom» (the »wandering» or »w» phenomenon). A distinct sensation of movement could also be noticed when there was only one periodically changing light area — a movement to and fro before the observer. In an analogous manner, moving phantoms could be found to occur when the stimuli were periodically changing colours, sounds, vibrations, and

pulsating air currents. It is Johansson's opinion that the moving phantoms, which remain as a rule qualitatively unchanged during the course of the motion, might be ranged among the other well-known constancy phenomena, and there is obviously reason for such a view. — Rubin and Duncker pointed to the fact that »system dissociation» might be considered as a constancy phenomenon. — As a whole, these phenomenal findings, many entirely new, ought to influence rather profoundly the discussion concerning constancy in perception. Johansson does not, however, pursue the analysis as far as he might, but he tentatively coins the term »event constancy» as broadly covering the different constancy phenomena in event perception, and as characterizing their special nature in comparison with other similar ones. On p. 184 he remarks: »finally it is the continuity in experience, the motion itself, that establishes the identity» (that is of the phantom) — an extremely interesting point of view, well worth ample treatment.

Among the headings under which the results are summarized, two may perhaps be reproduced in abbreviated form in order to amplify the foregoing exposé:

1. »Temporal relations were found to exert a decisive influence on the character and the structure of the configurations. — — — What here is decisive is — simultaneity. The simultaneous vectors which are equal form phenomenally a single motion, a motion unit.»
2. The experiments »have resulted in quite analogous configurations being observed in the different sensory fields».

There might be added a few critical notes. — First, from the point of view of Gestalt psychology itself a criticism may be directed towards Johansson of having underestimated the bearing of the gestalt laws already formulated. Besides the possibility of extending the proximity law to embrace also proximity in time — as Johansson tentatively does himself — there are the broad (and vague!) laws of likeness and direction, which might account for a good deal of the phenomenal grouping of events. The likeness must then, of course, include likeness in movement as a special characteristic (e. g. p. 62). — One also somewhat misses a discussion on the transposition-concept, and its relation to Johansson's own findings, especially in connection with the supreme importance of the temporal structure of event configurations.

Only a very scanty recording of the Os' statements has been given. In some of the tables (1, 2 and 3) a number of answers have not been recorded at all; perhaps none have in fact been given, but then this very fact ought to have been commented upon; in the great majority of the experiments, we miss enlightening tables and protocolled statements and only get a very generalized record of the outcome.

In many cases Johansson does not mention any standardized verbal

instructions given to the Os, or only very incomplete ones. Of course, one might retort that the experiments are very simple and the Os experienced. Still there is in all experimental work a necessity for the exact control of the conditions, which includes in psychology also the »Einstellung» of the Os. The author states (p. 29) that »the compelling character of an experience is not dependent on former experience» — and granted it were so there would be no reason indeed for controlling the »Einstellung» either. Yet such a point of view must be said to involve too great a simplification of the psychological problem. There surely does not exist in the psychological sense anything like unconditioned experience in adult man's life. And as to the »compelling evidence», which is to guarantee the lawfulness of the phenomenon in question, difficulties necessarily arise. In what manner is this evidence to be compared from one O to another, what is the meaning of »compelling»? Such principal methodological difficulties are at times encountered by the author but hardly solved, as when he acknowledges that »from time to time a stray case arises, which diverges in a more or less striking manner from the 'normal' type of reaction. This shows how a subjective attitude can, at times even to a relatively high degree, affect the perception of motion» (p. 54), or when he states that »the Os have, *in principle* (italics here) given a consistent account» (p. 148). In such cases he lets the reports of the most experienced Os prove decisive (p. 180). Closely associated with the question of evidence is the question of the choice of Os and the number required to assure »normality» — that is, again, lawfulness of the phenomena. Here, too, Johansson seems to have difficulties. In the experiments, 1—20 but in many cases only four or five Os have taken part and the author resents the necessity of defending himself against the charge of unjustly generalizing his findings. He discards the claim for statistical representativity as an irrelevant point of view and postulates that »*in principle* (italics here) the perceptual apparatus functions in the same way for all (normal) individuals» (p. 28). In my opinion, there may be ground for such conclusions as to generality even from so meagre a representativity, granted the very same phenomena could be shown to occur with any individual whatsoever under given experimental conditions. But this Johansson would hardly admit without adding »with any *normal* individual whatsoever». There obviously rests the difficulty of defining normality and if, when doing so, the author is to evitate a logical circle, there seems to be only one way of getting a logically coherent standpoint, that is to define it operationally. There exists in fact a relatively high degree of consistency between the reports of the Os in the great majority of the experiments. I think the explanation may be indeed the relatively uniform »Einstellung» of the *experienced* (sic!) Os, namely an »Einstellung» to isolate in the perception a rather circumscribed objectivation plane. Inasmuch as the Os are not trained they either tend

to describe the stimulus in accordance with the well-known stimulus error, or reconstruct more »subjective» experience phases (early objectivation phases), or mix them all without discrimination — in each case their descriptions are termed »subjective» — that is, in comparison with the ideal (optimal) objectivation plane (the »purely» phenomenological description) aimed at. Thus there might be ground for Johansson's postulate that the perceptual apparatus functions in principle in the same way for all normal individuals, granted that all Os could be given an exactly corresponding, »normal» »Einstellung». The difficulties involved herein are hard to master from a strict gestalt point of view, so one convenient solution is the arbitrary restricting of the field of description in time, which is common to Gestalt psychology in general. — A trait that Johansson has also in common with gestalt research workers is the »hunt» for »laws», i. e. of a very definite nature: laws that govern the connection between stimulus and phenomena. The phenomena (that behavior) which do not satisfy those laws are said to be »subjective». One might question, however, whether psychology is not indeed looking exactly for the »subjective» as opposed to the kind of »objective constructions» aimed at in the natural sciences (Natorp)? Of course, the direction towards the »subjective» does not in the least exclude the formulation of laws concerning the »subjective» phenomena, only these laws should not be of the classical grammatical type (Cassirer in »Substanzbegriff und Funktionsbegriff»). (For further critical notes on Gestalt psychology I would refer to a survey by J. Flensburg in *Studia psychologica et paedagogica* II, 1948, of Wertheimer's recent work »Productive Thinking»).

The experimental devices and the forceful pushing of the original problem into a wide and new field of research remain the great merits of this experimental work, unaffected by these critical remarks. It is to be hoped that the experimental contrivances can be somewhat simplified in order to make them more accessible to further experimental research. As is often the case, these experiments will also certainly lend themselves to new testing procedures within differential psychology and clinical diagnostic work, especially as a developmental characteristic inheres in their very nature, making them suitable for application in the psychology of personality.

Ulf Kragh.

Einar Tegen: *Amerikansk psykologi. Utvecklingslinjer och grundsyn. (American psychology. Lines of development and leading point of view.)* Stockholm 1949. 222 pp. Tiden. 12: 50 Sw. crowns.

In older text-books the difference between American psychology and European is usually identified with the difference between the study of behavior and the introspective method. One is apt to think of names such as Wundt and Titchener as contrasts to those of Thorndike and Watson. But this setting of bounds has not only lost its actuality during later decades; applied to an earlier period it also seems to be too abstract and schematic. From the present psychological point of view the question at issue between behaviorists and introspectionists is no longer considered as cardinal, however great proportions the discussion took in the beginning of the century. Both parties studied nothing but behavior, the introspectionists a behavior under peculiar conditions, it is true, but therefore no less interesting. American psychology during this century furthermore represents so many other things than the problems that can be derived directly from the attacks of the behaviorists on the older psychology. But though behaviorism in its view of the individual and the individual development did not mean an all-embracing revolution in psychology, its terminology and methods, however, stamp the American literature of psychology to such an extent that in a survey of American psychology up to 1930 much room must be given to behavioristic points of view. This Tegen has rightly done.¹

Titchener took Wundt's structural psychology to the United States, in a highly simplified form, however. According to this the contents of consciousness were the central object of investigation. They tried to analyse the elements of perceptions, the building-stones common to all individuals. The data were won by having the subject observe his own reactions. And data were then treated after quantitative principles borrowed from natural science. Even Thorndike's works became a protest against the introspective method, a protest that got its accentuation with Watson. Thorndike thought that his subject animals did not solve the tasks by means of thinking — their way to solution was determined by trial and error. He demanded more objective methods, a study of the behavior of the organism. To Watson all talk of consciousness appeared as a remnant from the time when the soul was still believed in. Quite a series of the problems of the older psychology were rejected as fictitious. The working hypothesis about the conditioning of reflexes derived from Pavlov was sub-

¹ Below the formal disposition of the book will be followed in the main, the treatment of the theme, however, partly go along other lines.

stituted for the former consciousness concepts. The behaviorists did not lack predecessors who had protested against the narrow formalism of the prevalent psychology. Wundt's disciple Cattell was interested in individual differences and introduced test methods on the Galton pattern. Like Dewey and James he emphasized the biological trend of psychology and regarded the acting organism as the primary object for studies. Even animal psychology gave behaviorism part of its methodic pattern. But Watson was the first to abjure all contact with the scientific tradition represented by the circle round Titchener. But in his radical effort to give all experimental data a mechanical explanation Watson once more approached the older association psychology: the concepts reflex and conditioning proved to have the same formal relation to each other as elements of perception and association.

The radical behaviorism thus got into a blind alley quite like Wundt's psychology. So it seems to be more reasonable to connect modern ways of thinking in American psychology with the predecessors of behaviorism than with the radical behaviorists themselves. And one notes with satisfaction that among other things Tegen has taken up James and Dewey for a closer examination. James inserts his psychology in a biological connection and regards it as a study of the adaptation problems of the organism, of acting, emotions and instincts. Intellectual processes are reduced to instruments in the service of acting. The prevalent elementary theory is criticized: the experiencing is unitary and continuous. Dewey lays stress upon the acts, the processes in the living organism. Even his criticism affects the attempts to find utmost elements, not those of the association psychologists but rather those of the behaviorists. The part of consciousness in the activity and adaptation of the organism is recognized. With Carr a more teleological point of view comes in addition, the use and purpose of the act. The old problem concerning the relation between physical and psychical processes is of course removed in a psychology that deals more with the adaptation to actual life conditions of the organism than with conscious intellectual processes. But nevertheless there remains the question how a physiological explanation will be linked together with data gained by the psychologist, e. g. how a brain-physiological hypothesis can add to the understanding of the continuity in experiencing. In his criticism of the elementary theory James points out that only the physiological processes, not the stream of consciousness, contain elements and by that he indirectly lets physiology and psychology stand out as different aspects on the individual, the physiological one being more objective in its efforts to find general and substantial data.

After James the instinct problem comes into the centre of the psychological discussion. Maybe the account of this discussion encroaches too much on the space of the book. But these pages, on the other hand, cor-

respond to a very extensive American literature and reflect how earnestly the problem has been dealt with. The concept instinct is often traced back to McDougall who has fully treated the problem of motivation. The spring of action is, according to him, not to be found in the pure (intellectual) idea but in the emotional motives, the innate instincts. The scientist here observes certain fixed patterns of behavior in the individual and sums them up as innate and unchangeable. These patterns of behavior are then hypostasized to an instinct, i. e. some sort of power or substance which in its turn is made the cause of the behavior. Ellsworth Faris rightly characterizes the instinct doctrine as a product of the writing-desk and finds the variation in instinct lists suspicious. But many of the instinct critics have certainly not escaped the very dangerous trap that the hypostasizing thinking is, not Watson with his list of positive and negative reaction tendencies in the child, not Floyd Allport with his six prepotent reflexes, not L. L. Bernhard. Nay, also Dewey yields to the temptation of describing habit as some kind of power or disposition, even though he emphasizes the operational character of the concepts all the time. But in him you also find the interest in the development of habit of behavior that can probably supplant all instinct- or quality speculation and fit the action or experiencing into a concrete continuity of development. Then you may remark, as Tegen does, that the direction-determined tendency stands out everywhere in the individual behavior — it does not, nevertheless, imply any metaphysical explanations with inherent powers or substances.

The stimulus-response scheme is penetratingly illustrated in the book, too. Watson does not only allow for external stimuli but equally much for internal, e. g. the influence of the organism itself, its muscular contractions, glands etc. This physiological aspect must be considered as completely adequate, if one wants to separate stimulus and response. The pure stimulus belongs to a physical reality and corresponds to a physical-physiological individual. But in its application this abstract scheme meets with difficulties even in Watson himself who is forced to speak about the external situation along with stimulus. This external situation, i. e. society, is no longer a fully objectivated physical fact, it is to a high degree determined by valuations, by more subjective layers in our experiencing. Nay, even in the psychological experiment stimulus can not be described, e. g. not in Murray's Thematic apperception test.¹ As soon as we adopt the psychological attitude, Watson's abstraction thus proves to be difficult to retain. Behavior means a relation between individual and objective surroundings (stimulus) and therefore includes both stimulus and response. Woodworth hints at a similar criticism and tries to extend the scheme. But like every explanation which originally is founded on physiology this

¹ The practical solution here is to derive stimulus from average behavior.

scheme must fall short before behavior- and experiencing data. How incredibly formalistic and complicated a radical behavioristic explanation would appear in a language-psychologic connection, e. g. when it comes to describing the concrete behavior of brain-traumatists as against non-traumatists. And the scheme is broken even in Carr who co-ordinates stimulus with motive. Also Woodworth takes new ways when defining personality as a quality in behavior and not as a sum of habitual systems, i. e. special responses to special stimuli. The attempts to establish stimulus should of course not cease, since they aid in making our experimental data comparable. But the science that in its interpretations persists in a Watson-division in stimulus and response and that does not seek concepts to grasp the relation of concrete behavior-data to each other in the present and in a development can never deepen its analysis to real personality psychology.

Closely connected with the stimulus-response scheme is the problem of heredity and surroundings. Woodworth stresses that the individual development is dependent on both heredity and experience. Maybe rather heredity and surroundings, since experience already belongs to the individual himself and can not be considered as external influence. Furthermore he refrains from determining which weighs most in development, heredity or surroundings, as both are indispensable factors and can not be imagined without each other. The proper question is instead: Are differences in heredity or in surroundings of greatest importance to the generation of individual differences. This way of thinking, however, you find very early in the German twin-researcher Lenz. In Woodworth's very sensible investigation of this much-disputed problem there is lacking, above all, a clear definition of the concept heredity; it is near at hand that heredity will take the place of instinct as a metaphysical explanation of the unchangeability of behavior. Heredity properly means that children resemble their parents, that they have inherited certain characteristics from them. But in twin research heredity can more naturally be fitted in among purely psychological concepts and then implies nothing but the greater or lesser unchangeability (peristatoco-stability) in the behavior development under varying external conditions. Woodworth also exhorts to intensified research of surroundings: before speaking about the possibilities of changing the development of man, it ought to be settled what are really similar surroundings and what are not.

When, towards the end of the book, more intricate problems are taken up for examination, e. g. motivation, one sometimes misses, which Tegen indicates in his criticism, the distinct analysis of concepts that distinguishes the best of European psychology. The Americans work with a will, attack new problems as well as old ones without hesitation and are not bound by traditional points of view. But some discussion seems to concern sham

problems, long ago removed from European psychology and is stamped by lack of philosophic patience. During the later decades the picture has been changing in many ways, however. Gestalt-psychological aspects are combined with behavioristic ones, psycho-analysis is more and more accepted and, in its new forms, stimulates a far-reaching personality research. Tegen makes a stop at these new currents. One looks forward with expectations to the sequel announced. The description of American psychology up to 1930 keeps to essential or at least actual problems and gives the gist of the views, not always in a simple language but with interesting concretion and accurate criticism. How much richer the material from the two later decades ought to be, the time of beginning maturity and consolidation of American psychology! Think of names such as Murray, Lewin, Marquis, and Rapaport.

Gudmund Smith.

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